

**Queen Mary's College (Autonomous),
Chennai – 600 004.**



**NATIONAL SEMINAR
ON
“EXPLORING THE SCOPE OF PLANT SCIENCE”
(ESPS -2020)**



ABSTRACT & SOUVENIR

**Organised
By
Post Graduate and Research Department of Botany**

Date: 9th and 10th January 2020

SPONSORED BY : TANSCHÉ



SOUVENIR
of
NATIONAL SEMINAR
on
EXPLORING THE SCOPE OF PLANT SCIENCE
(ESPS- 2020)

on 9th & 10th JANUARY 2020



Organised by
POST GRADUATE AND RESEARCH
DEPARTMENT OF BOTANY
QUEEN MARY'S COLLEGE (A)
Chennai - 600 004,

Sponsored by
TANSICHE

ORGANIZING COMMITTEE OF THE SEMINAR

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Dr. S.Karpagam

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Dr. R.Vijayalakshmi

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University of Madras
Chepauk Campus, Chennai-600 005
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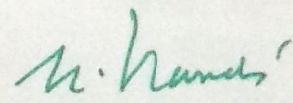
Dr.K.PANDIAN, M.Sc.; Ph.D
Controller of Examinations

Message

Queen Mary's college is one of pioneer institute especially the empowering of women education in southern part of India. Among other department Botany is seems to be contributing a lot of research innovation and job opportunities to the students community. I wish to express my sincere gratitude for the success of the two days seminar on "**Exploring the scope of Plant Science**" during 9th and 10th January 2020. The theme of the conference is going to attract many young minds and motivates researchers and industrialist. Hope the conference comprises of invited talks and interactive sessions with scientific society.

The broad theme of this conference includes medicinal plant and healthcare, agriculture sciences and organic farming attracts industrial and interdisciplinary reaches that give us added advantages.

I wish the conference is going to be a great success and benefit to Students, Research scholars, Faculty members and Scientists.


Dr.K.PANDIAN



மனோம்மனியம் சுந்தரனார் பல்கலைக்கழகம்
Manonmaniam Sundaranar University

State University

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Dr. S. Santhosh Baboo

Registrar

MESSAGE

I am very happy to note that the Department of Botany, Queen Mary's College, Chennai-600 004, is organizing an National Seminar on "Exploring the Scope of Plant Science [ESPS-2020]" during 9th & 10th January-2020.

Title of the seminar is addressing the recent findings in different disciplines of latest innovations in plant science, pharmacognosy and other related fields. Moreover, it aims at gaining knowledge on Biodiversity and its conservation. It also imparts the traditional values of medicinal plants.

I am confident that the seminar will provide opportunities for the budding young scientists to share their ideas with the experts in the field. I strongly believe that this event will create a constructive platform for the exchange of research thoughts and new research collaborations that will collectively benefit the nature and the society.

Moreover, the seminar has invited lectures on various themes by experts in order to help the young minds to boost their innovative thoughts.

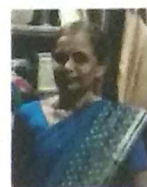
I take this opportunity to congratulate the organizing committee of ESPS-2020 for having undertaken this commendable endeavour. Also I appreciate the participants from various parts of the country, and we consider it our privilege and honour to have you all over here.

I wish the seminar a grand success

(Dr. S.SANTHOSH BABOO)



**QUEEN MARY'S COLLEGE (AUTONOMOUS)
(AFFILIATED TO UNIVERSITY OF MADRAS)**



**Dr. S. SANTHI
PRINCIPAL**

6.1.2020

MESSAGE

I appreciate that the department of Botany is conducting a two day National Seminar on "EXPLORING THE SCOPE OF PLANT SCIENCE (ESPS- 2020)" on 9th and 10th January 2020.

It gives me great pleasure to extend greetings and warm welcome to everyone attending the seminar. The plants are the basis for life on earth, many of the chemical reactions occur continuously in their cells that sustains the life. Over exploitation and pollution has lead to many serious consequences. Cleaning up the pollution is also facilitated by the plants and micro organisms. Tree planting and using herbal remedies for diseases like dengue are in the forefront of the government and NGO's agenda. Botany forms the basis for many of the recent sciences like bioinformatics and molecular biology. Gatherings in a seminar are known for knowledge sharing, exchange of research ideas of specific techniques and topics in Plant Science field. Seminar opens the possibility for interdisciplinary and Trans disciplinary themes that address the challenges in various fields from multiple theoretical and practical standpoints.

I congratulate the staff members of the Botany department for organizing the seminar. I wish them all the Best for the success of the seminar.

S. Santhi
06-01-2020

**Dr. S.SANTHI
PRINCIPAL**

PRINCIPAL
Queen Mary's College (
Chennai - 600 004.



QUEEN MARY'S COLLEGE (AUTONOMOUS)
(AFFILIATED TO UNIVERSITY OF MADRAS)
DEPARTMENT OF BOTANY

Dr. S. KARPAGAM
Head, Department of Botany

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“It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.”

-Charles Darwin

I am delighted to introduce the souvenir of the National seminar on “EXPLORING THE SCOPE OF PLANT SCIENCE (ESPS- 2020).”

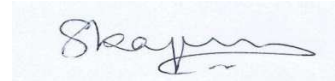
This seminar will provide a dedicated platform to peer researchers, young inspired scientists, academicians, and industrialists to meet, discuss and share the knowledge that's still more to be revealed in the field of Plant Science, Plant Biology and Plant Molecular Biology. This seminar includes several interactive sessions specifically designed for the research students mainly to reinforce the interdisciplinary approach for innovation and invention in plant science research. Plants are the backbone of civilization which in-turn depends on the geographical location and climatic conditions. Biodiversity includes every individual species of the flora and fauna and the inevitable microbial world. As any other need, we look to plants for therapeutic purpose. The climate change, habitat destruction, and pollution are threats to the ecosystem and in turn harms every species on earth. The threats could be addressed by reforestation, recycling and reusing the resources.

With this prologue I would like to mention that the main aim of the seminar is to bring the various experts of botany related to plants and advances in plant science to a common platform so that the students could benefit from them.

I sincerely thank **Dr. K.R. UMA DEVI**, Scientist 'E' & Head of Immunology, ICMR – National Institute for Research in Tuberculosis, **Dr. M.N.ABUBACKER**, Associate Professor & Head, Department of Biotechnology & Microbiology, National College, Trichy, **Dr. V.P. SOBHA KUMARI**, Principal Scientist (Genetics and cytogenetics), ICAR-Sugarcane Breeding Institute, Coimbatore, **Dr. N. BALUSAMY**, Fmr. Director, SFS, Associate Professor and Head (Retd.), Madras Christian College, **DR.**

N.K. UDAYA PRAKASH, Associate Professor of Biotechnology, Vels Institute of Science, Chennai, **Dr. R. PACHAIAPPAN**, Associate Professor, Dept of Biotechnology, School of Bioengineering, Kattankulathur campus, SRM University for consenting to deliver the plenary lecture and to make the seminar a memorable one.

This conference will be discussing various aspects of research pertaining to plants which covers broad topics like biodiversity, pharmacognosy, biotechnology, microbiology, nanotechnology and bioinformatics. We received huge response from academicians, research scholars and students. To provide an opportunity for the research scholars we have included four paper presentation sessions so that each and every research scholar could get a chance to express their work and to interact with. We wish to thank all the authors for their participation in the seminar. Last but not the least, I take this opportunity to thank my team members for their constant support and encouragement.



Dr. S.KARPAGAM
Organizing Secretary

Disclaimer:

The opinions expressed by the authors are their own and editors cannot accept any legal responsibility or liability for the views of the authors or any omission or inadvertent errors.

QUEEN MARY'S COLLEGE
Chennai - 600 004

Post Graduate and Research Department of Botany invites you to the
National Seminar on
“EXPLORING THE SCOPE OF PLANT SCIENCE”
(ESPS- 2020)

PROGRAMME (04-01-2018)

8:30-9:00 a.m. Registration
9:00-10:30 a.m. Inauguration

INVOCATION

Lighting of the kuthuvillakku

Welcome address : **Dr. S. SANTHI**
Principal, Queen Mary's College,
Chennai 600 004.

About the Dept. and Seminar : **Dr. S. KARPAGAM**
Associate Professor and Head,
Department of Botany,
Queen Mary's College, Chennai.

RELEASE OF THE SOUVENIR

Inaugural Address : **Dr. R. RAVANAN**, M.Sc., M.Phil.,
Ph.D.
Joint Director of Collegiate Education,
Chennai Region, Chennai 600 015.

Keynote Address : **Dr. K. R. UMA DEVI**
Scientist 'E' and HOD,
Department of Immunology,
ICMR-National Institute for Research
in Tuberculosis, Chennai.
“Tuberculosis- Past And Present”

Vote of Thanks : **Dr. T.V. POONGUZHALI,**
Associate Professor of Botany,
Queen Mary's College,
Chennai 600 004.

10:30 – 11:00 a.m. Tea Break

PLENARY LECTURE - I

11:00-11:45 a.m. : **Dr. M. N. ABUBACKER,**
Associate Professor & Head,
Department of Biotechnology &
Microbiology,
National College, Trichy.
*“Phytoremediation Of Heavy Metals By
Aquatic
And Wetland Plants - Ecofriendly Approach”*

11.45 – 1.00

Paper Presentation I

Chairperson

-

Dr. M. N. ABUBACKER

Co-Chairperson

-

Dr. D. DHANAVEL

Associate Professor of Botany,
Annamalai University,
Chidambaram.

1:00-2:00 p.m.

Lunch break

PLENARY LECTURE - II

2:00-2:45 p.m.

Dr. V.P. SOBHA KUMARI

Principal, Scientist (Genetics &
cytogenetics),
ICAR-Sugarcane Breeding Institute,
-Coimbatore.

“Advances In Plant Cytogenetics”

3.15 – 4.00

Paper Presentation II

Chairperson

-

Dr. V.P. SOBHA KUMARI

Co-Chairperson

-

DR. J.JOEL GNANADOSS

Assistant Professor of Botany,
Loyola College, Chennai 600 034

PROGRAMME (05-01-2018)

9.00 – 9.45 a.m.		PLENARY LECTURE - III Dr. N. BALUSAMY Fmr. Director, SFS, Associate Professor and Head (Retd.) Madras Christian College Chennai-600 059. <i>“Marine Algae – Food for Health”</i>
9.45 – 10.30 a.m		PLENARY LECTURE - IV DR. N.K. UDAYA PRAKASH Associate Professor of Biotechnology, Vels Institute of Science, Pallavaram, Chennai - 600117 Director (Honorary) R and D, Marina Labs, <i>“AEROBIOLOGY : IT’S CURRENT SCENARIO”</i>
10.30 -11.00 am		Tea break.
11:00 – 1.00 p.m.		Paper Presentation III
	Chairperson -	Dr. N.K. UDAYA PRAKASH
	Co-Chairperson -	Dr. T.S. SUBHA Associate Professor of Botany Bharathi Women’s College, Chennai.
1.00 – 2.00 p.m.		Lunch
2.00 -2.45 p.m.		Dr. R. PACHAIAPPAN Associate Professor, Dept of Biotechnology, School of Bioengineering, Kattankulathur campus, SRM University <i>“Integrated Proteomics And Metabolomics Approaches: Status And Prospects”</i>

2.45- 3.30 p.m.

Paper Presentation IV

Chairperson

-

Dr. R. PACHAIAPPAN

Co-Chairperson

-

Dr. A. GANDHI

Assistant Professor,

Department of Botany,

H.H. The Rajah's College,

Pudhukottai.

3:30-4:00 p.m.

Valedictory Address

Prof. K. PANDIAN, M.Sc., Ph.D.

Controller of Examination,

University of Madras,

Chepauk, Chennai – 600 005.

Announcement of Prize winners :

Dr. R. VIJAYALAKSHMI,

Assistant Professor of Botany,

Queen Mary's College, Chennai

Summing up the seminar

Dr. A. VETRSELVI,

Assistant Professor of Botany

Queen Mary's College

Vote of Thanks

Dr. R. SRIDHARAN

Assistant Professor of Botany

Queen Mary's College

PAPER PRESENTATION- I

1. **Tree Diversity and Above-ground Biomass in Pachaimalai Hills of Southern Eastern Ghats, Tamil Nadu, India** MANIKANDAN S., T. SEKAR
2. **Plants Used for Ethnobotanical Practices by Tribes of Kambakkam of Eastern Ghats** MUNUSWAMY E. ¹, MANORANJITHAM M.² AND SUJATHA G
3. **A Novel Enumeration Record of Succulent Cactoideae Members of Chennai.** MOHAMED NIYAZ A. AND RAVIKUMAR S
4. **A Note on *Pamburus Missionis* (Wight) Swingle (Rutaceae) - A lesser known evergreen tree species native to Tamil Nadu** ABDUL KADER S., DARWIN A., DEVARAJAN P.T., SANTHANAPANDI P., AND WASIM AKRAM, S. A.
5. **Butterflies and Their Behaviour** BAVANI GOVINDARAJULU
6. **Studies on Traditional Medicinal uses of Asteraceae Family Members in Pilathara Village, Kannur District, Kerala.** ARUN V P, KUMARASAMY D. AND NAHENDRAN C.
7. **Isolation and Characterisation of Microalgae from Kolavai Lake, Chengalpet, Kanchipuram, Tamil Nadu, India** DESINGURAJAN P., U. KOTEESWARI, P. GAYATHRI AND B. SANKARAN
8. **Phylogeny Unravels the Species Delimitation in *Nothapodytes nimmoniana* (J. Graham) Mabb. Based on Chloroplast and Nuclear Markers** CORDILEA HANNAH^{1,3}, SENTHILKUMAR UMAPATHY², JOYCE SUDANDARA PRIYA E^{3*}
9. **Microscopic Standards for Botanical Identify of the BARK Samples of the Conifers *Cupressus lawsoniana* A.Murray.** ARUNTHATHI.M, POONGUZHALI.T.V.
10. **Medicinal Values of *Eclipta Alba*, Its Distribution and Commercialization in the World Market** N. GAYATHRI
11. **Studies on Morphological Structures of Root Nodules of the wild Available *Crotalaria Species* (*Crotalaria retusa* L. and *Crotalaria trifoliastrum* Willd.)** K. RAMANI

12. **Studies on Food Values and Nutraceutic Values of Some Selected Galls**
SIVAGAMASUNDARI M.
13. **Anatomical Studies of *Borreria hispida* (L.) K. Schum - An Ethnobotanically Important Medicinal Plant** THENMOZHI P. ¹ AND POONGHUZHALI T.V. ²
14. **Formulary and folklore Herbs that are used in effective Healing Therapy**
G.A.ASIF JAMAL
15. **Morphological and Leaf Anatomical Studies of *Hildegardia populifolia* (Roxb.&Wall.) Schott&Endl. [= *Sterculia populifolia* roxb. & wall.]**
SANTHANAPANDI P., SATHISHKUMAR S. AND S. ABDUL KADER
16. **நிலப்பகுப்பும் தாவரங்களும் தமிழிலக்கியச் சான்றுகளின் வழி ...முனைவர் ப.பத்மினி, இணைப்பேராசிரியர், தமிழ்த்துறை, இராணிமேரி கல்லூரி, சென்னை.**⁴

PAPER PRESENTATION- II

17. **Hepatoprotective and Antioxidant Effects of *Ecbolium viride*, *Gendarussa vulgaris* and *Sphaeranthus amaranthoides* in NASH Induced Hepatotoxicity in Albino Wister Rats** POONGUZHALI T.V.¹ AND SUBHASHINI S²
18. **Pharmacognostic and Pathological Studies on *Atalantia Monophylla* (Rutaceae),** SIVASHANKARI.S¹, MUNUSWAMY.E² &KRISHNAN.
19. **Phytochemical Screening and GC-MS Analysis of Whole Plant Extract of *Dendrophthoe falcate* (L.f) Ettingsh.** SHAIK AZEEM TAJ, ² B.S. BALAKUMAR AND ³SHAIK KHAJA RASOOL
20. **Analysis of Antibacterial Activity of Leaf and Callus of *Pisonia grandis***
SARITHA B¹.AND KARPAGAM S
21. **Phytochemicals and Histochemical Analysis of Aqueous Flowers Extracts of Four *Bauhinia* species (*B. acuminata* L., *B. purpurpea* L., *B. racemosal.* and *B. tomentosa* L.)** Caesalpiniaceae UMABHARATHI J. and RAMANI K.

22. **Screening of Phytochemicals and *in vitro* Antioxidant Activity of *Cannanga odorata* (lam.) Hook. F. & Thomson and *callophyllum inophyllum* l.** ISAIVANI. I AND S. KARPAGAM
23. **Phytochemical and Anti-inflammatory Studies of the Seaweeds – *Turbinariaornata* and *Halymeniadilatata*** BHUVANESWARI K. AND T. V. POONGUZHALI
24. **Phytochemical Screening and Antioxidant Activity of Leaf Extracts of *Morindatinctoria* Roxb.** HARITHA V. AND V. MEENAKSHI SUNDARAVALLI
25. **Antimicrobial Activity of Ethanolic Root Extract of *Diospyros Ferrea* against Some Pathogenic Microorganisms,** VIJAYALAKSHMI R.
26. **Preliminary Phytochemical Analysis, Antioxidant and Anti-haemolytic Activity from Leaf and Callus Extract of *Eupatorium triplinerve*** USHA S. AND S. KARPAGAM
27. **Preliminary Phytochemical Analysis and Antibacterial Activities of *Cardiospermum halicacabum* . L (Sapindaceae),** NANDHAGOPAL K.
28. **Preliminary Phytochemistry and Antibacterial Activities of *Chara* . L (Chlorophyceae)** NIRMAL NEVEDHANA K.B¹ AND AYYAPPAN. M²
29. **Phytochemical and Antioxidant Screening of *Terminalia catappa*, Linn.** JABEENA BEGUM P.
30. ***In- vitro* Antioxidant Activity of Methanolic Extract of *Chloroxylonswietenia* (Leaf, Stem Bark and Root)** RAJESH E AND SEKAR T
31. **Anatomical Observations on Auyurvedic Plant drug *Hygrophila auriculata* (K.Schum). Heine** SHAHIRA BANU D.A.
32. **Nutritional value of *Annona squamosa* and *Annona reticulate*** ANANTHAVALLI M AND KARPAGAM S.
33. **Phytochemical Analysis and Antibacterial Activity of *Annona squamosa* and *Annona reticulate*** ANANTHAVALLI M¹ AND KARPAGAM S

34. **Biological Data Analysis Using Artificial Intelligence (AI)** ¹MANAMALLI.T.V,
²RAMESH.B
35. **Phytochemical content and antibacterial activity of *Syzygium cumini***
G.ISWARIYA, ANANTHAVALLI M. AND KARPAGAM S.
36. **Evaluation of Antioxidant Properties of R-Phycoerythrin Extract from *Spyridia filamentosa* (Wulfen) Harvey** AYYADURAI BRABAKARAN¹,
SHYAMALA VISWANATHAN², KOTHILMOZHIAN RANISHREE
JAYAPPRIYAN³ NALLAMUTHU THANGARAJU⁴ AND SELVA ROSELIN L⁵
37. ***In-vitro* Antioxidant and Cytotoxic Activity of Methanolic Extracts from
Brown Seaweeds,** VETRISselvi A. AND ARUNADEVI R.
38. **A Study of the Phytochemical Analysis and *In-Silico* Studies of the
Antidiabetic Properties of the Leaves of *Moringa Oleifera*,** SARASWATHI P.
and AMALORPAVAM J.
39. **GC-MS Analysis of the Marine Algae *Halymeniadilata*** BEEMAJAINAB .S.I¹,
AMTHUL AZEEZ ², RANJITH³ AND ASMAFATHIMA
40. **Gas Chromatography-Mass Spectroscopy Analysis of Black Plum's Seed,
Bark, Leaf (*Syzygium Cumini*) Extract in Acetone Extract** ISWARIYA G. ¹, M.
ANANTHAVALLI² AND S. KARPAGAM³
41. **Phytochemical Screening and Antioxidant Activity on *Syzygium
Caryophyllatum* (Myrtaceae)** ¹KAVITHA V. AND POONGUZHALI T.V.²
42. **Separation of Phytochemical Compounds from Ethanol Extract of Shoot of
*Phyllanthus debilis*** M. POONGANI
43. **Phytochemical Investigation, Optical Characterisation and Antidiabetic
Studies of *Cassia auriculata* (Avaram Poo)** SRIVIDYA J¹, USHA G. ²
44. **Quantification of total phenolic content and evaluation of free radical
scavenging potential of leaf extract of *Morinda tinctoria* Roxb.** V. HARITHA¹
AND V. MEENAKSHI SUNDARAVALLI²

45. **Microscopic standards for Botanical identification of the Bark samples of the Conifer *Cupressus lawsoniana* A.Murray ARUNTHATHI.M¹. AND POONGUZHALI.T.V.²**
46. **Plastic Degradation Using Seaweeds Amended In Natural And Artificial Seawater Media, D. KAVIYA¹, R. SHEELA², AND T.V. POONGUZHALI³**
47. **Phytochemical screening and antioxidant activity of leaf extracts of *Morinda tinctoria* Roxb. V. HARITHA¹ AND V. MEENAKSHI SUNDARAVALLI²**

PAPER PRESENTATION -3

48. **Identification Of Molecular Target Using Exome Sequence Analysis and Potential Phytochemical Using Virtual Screening to Inhibit S100z - an *In-Silico* Analysis P. JASWANTH JENNY, ALWIN BABU S, DHAMOTHARAN R**
49. ***Chlorococcumhumicola* - A powerful Source of Carotenoids to Target Against Benzo (a) pyrene Induced Lung Cancer by LC-MS, NMR and Molecular Docking Studies BHAGAVATHY S. AND SUMATHI P.**
50. **Docking studies on the phytochemicals Isolated from *Aegle marmelos* against Methicillin resistant *Staphylococcus aureus* (MRSA) SRIKALA K. AND KARPAGAM S**
51. **Enhanced Solar UVB (280-320 nm) Radiation as a Provoker of Secondary Metabolites Synthesis in *Acalypha indica* L. KANNIAPPAN, M AND SHANTHI, N**
52. ***In-silico* Molecular Docking Study of the Molecule Methyl 3 β - hydroxyl-bisnorellocholanoate from Coconut Shell Oil on Epidermal Growth Factor Receptor DORATHY SELVA JEBA PRITHA S. AND KARPAGAM S.**

53. **Chlorophyll And Morphological Mutants of Little Millet (*Panicum sumatrense* Roth ex Roemers & Schultes.) variety Co (Samai)**4. RAMKUMAR R., D. DHANAVEL, S. KASTHURI, AND D.PRIYANKA
54. **Focus on Inhibition of Diabetes in *Dryopteris cochleata* by A-amylase and α -glucosidase Enzymes** PRIYA G, SARANYA R and SEKAR T
55. **Physical Mutagenic Studies on Little Millet (*Panicum sumatrense* roth..) In m₁ Generation** DHANAVEL D. AND R. RAMKUMAR
56. **Phytoconstituent Analysis and Inhibitory Potentials of *Stevia Rebaudiana* (Bertoni) Leaf Extracts Against Bacterial Pathogens** A.AFROSE BANU , V.ANURADHA, ANEESH NAIR, FLORIDA TILTON
57. **Antimetastatic Activity of Isolated Phytochemicals from *Vitex Negundo* through Liposome Mediated Nano Carriers in Mammary Carcinoma** G. SHIVAPRIYA
58. **Molecular docking Analysis of methanolic Flower extracts of *Bauhinia purpurea* Linn. and *Bauhinia tomentosa* L.** SARAVANA PRIYA M. ¹ AND KARPAGAM S. ²
59. **A Preliminary Study on the Morphology, Anatomy, Proximate, Mineral Analysis and Chlorophyll Estimation on Selected Grasses** ASHAEL RHAETIA R., RAVI SHANKAR S., POONGUZHALI T.V.
60. **Herbal Pharmacokinetics Isolated from *Vitex negundo* Attenuates Rheumatoid Arthritis** GAYATHRI DEVI R, BHAGAVATHY S
61. **Quorum Sensing Inhibitory Potentials of *Withania Somnifera* (Ashwagandha) Leaf Extracts Against *Chromobacterium violaceum* Biofilms** 1fATHAUNNISHA. S, HEMAMALINI². V, ANEESH NAIR³, FLORIDA TILTON⁴

PAPER PRESENTATION -4

62. **Phytoremediation of Heavy Metals Using Commercial Varieties of *Melia dubia* Cav -A multipurpose Tree Crop for Sustainable Utilization in Waste Land Management** UMA GOWRIE¹, MAHALAKSHMI.R² S. AND ABIRAAMI VALLI S.²
63. **Banana Spathe Based Compost and Its Effect as a Substrate on the Growth of Rice Plants** S. SUGANTHI¹ AND S KAVITHA²
64. **Vermicomposting of Tamarind Shells and Egg Shells** BAKKIARAJ K. AND S. JAYAKUMAR
65. **Vermicomposting of Arecanut Leaves.** RAJENDRABHOOPATHY S AND JAYAKUMAR S.
66. **Organic Farming for Sustainable Agriculture** S.KARPAGAM
67. **Household Remedy for Mosquito Menace** S. JAYAKUMAR
68. **Vermicompost: A Potential Organic Fertilizer for Sustainable vegetable production** GANDHI A., INDHURANI AND CLARAMARRY
69. **Biosorption of Heavy Metals by Agro-waste from Tannery Effluent** KAMALASANKARI S.A.M. AND S. KARPAGAM
70. **Heavy Metal Accumulation from Tannery Effluent by *Eichhornia spp.*,** KAMALASANKARI S.A.M. AND S. KARPAGAM
71. **Phycoremediation of Dairy Effluent Using Cyanobacteria** KOTTESWARI, M AND MURUGESAN, M
72. **Effect of Panchakavya on the Fertility of Soil** RAMYA V. AND KARPAGAM S.
73. **The Effect of Panchakavya and the Yield of Ragi Crop** RAMYA V. AND KARPAGAM S.
74. **Phytochemical Screening Of Brown Sea Weeds Used In Degradation Of Plastics Ameded In The Natural And Artificial Sea Water Media.** D. KAVIYA, R. SHEELA, and T.V. POONGUZHALI

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100. **Potential of sodium alginate in immobilization of micro algae.** G. DEVAKIRUBAI AND T. V. POONGUZHALI
101. **A Study On Medicinal Properties Of *Tamarindus Indica*,** ASHIFA A¹ and VIJAYALAKSH R.
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INVITED LECTURES

TUBERCULOSIS- PAST AND PRESENT

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ABSTRACT

Tuberculosis (TB) is a communicable disease that is a major cause of ill health, one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent. Globally, an estimated 10.0 million people fell ill with TB in 2018, a number that has been relatively stable in recent years. The burden of disease varies enormously among countries, from fewer than five to more than 500 new cases per 100 000 population per year India accounts for about a quarter of the global TB burden. Worldwide India is the country with the highest burden of both TB and MDR TB. There are an estimated 79,000 multi-drug resistant TB patients among the notified cases of pulmonary TB each year. India is also the country with the second highest number (after South Africa) of estimated HIV associated TB cases. In this presentation, The discussion will be about TB, its mode of spread, the diagnostic tools available for detection including the conventional methods of TB diagnosis that involves an extensive time delay in reporting and about the current molecular methods. The recent understandings on the genetic basis of resistance that could aid in timely treatment of multidrug resistant TB and for prevention of transmission of the epidemic in the country, the current plans for TB elimination by WHO along with the present initiatives taken towards the same in our country will also be discussed.

PHYTOREMEDIATION OF HEAVY METALS BY AQUATIC AND WETLAND PLANTS - ECOFRIENDLY APPROACH

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Abstract

Phytoremediation is the process that introduces plants into environment and allow them to assimilate the contaminant into their roots and leaves. Such process has been used to cleanup heavy metals, pesticides, xenobiotics, organic compounds and acid mine drainage. Aquatic macrophytes are widely distributed in various wet environment from fresh to salt water and they play an important role in heavy metal cycling in the wet land due to uptake, storage and release processes in the form of phytoremediation. Phytoremediation is cost effective, environment friendly, aesthetically pleasing approach and most suitable for developing countries . method *In vivo* bioaccumulation of metals from the water source by native aquatic and wetland plants selected for this research work are *Aponogeton natans*, *Eichhornia crassipes*, *Lemna polyrrhiza*, *Pistia stratiotes*, *Scripus maritimus* and *Typha angustata*. The SEM-EDX elemental analysis of *in vivo* bioaccumulation resulted in the maximum accumulation of chlorine 2.94%, sodium 2.29% and silica 1.52% by *A. natans*. *E. crassipes* accumulated 1.20% of potassium, *L. polyrrhiza* 4.93% of potassium, 4.59% of calcium, 2.25% of phosphorus, 2.17% of sulphur, 1.98% of chlorine, 1.75% of iron and 1.38% of magnesium. *P. stratiotes* accumulated 9.07% of silica, 2.04% of potassium, 1.30% of sodium *S. maritimus* accumulated chlorine 1.82%, potassium 1.13%, calcium 1.04%, sodium 1.00% and 0.77% of fluorine. *T. angustata* accumulated 2.84% of chlorine, 1.56% of potassium and 0.92% of calcium.

ADVANCES IN PLANT CYTOGENETICS

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ABSTRACT

Cytogenetics plays an important role in understanding the chromosomal and genetic architecture of a plant. The pioneering cytogenetic findings in *maize*, *Datura* and *Drosophila* during early twentieth century explained the cell divisions, somatic chromosome number, location of the genes on the chromosomes, mutations etc. Since its origin cytogenetics has exploited in areas involving organisms ranging from virus to mammals. Plant cytogenetics has been progressing at an extremely rapid speed with sequential discoveries in the science of cytology. The identification and nomenclature of chromosomes from classical acetocarmine and feulgen staining techniques have progressed to Giemsa banding, fluorescence *in situ* hybridization (FISH), genomic *in situ* hybridization (GISH), multicolor GISH/FISH, fiber FISH, Pachetene analysis and sorting and karyotyping chromosomes by flow cytometry. In the last two decades with the development of cyto-molecular techniques, mainly *in situ* hybridization and its numerous variants, plant cytogenetic research has greatly advanced, revealing unexpected details of chromosome behavior and evolution.

The cytogenetics of grasses has always been the most advanced area in plant cytogenetics and when combined with molecular cytogenetic techniques it provides a flexible model to study the behavior of individual chromosomes or chromosome fragments in natural and artificial hybrids. Since most of the plants, especially cultivated ones, originated from one or two hybridization events followed by polyploidization this techniques have become the most common way to analyze auto and allopolyploids. The utilization of GISH technique opens the way to clear genome distinction in hybrid derivatives by explaining the gene and chromatin introgression of wild species in to cultivated ones. Among the Poaceae family sugarcane is considered as least exploited crop with modern cytogenetic techniques because of its unusual genome complexity and interrelationships within the genera. The potentiality of molecular cytogenetic tools has been utilized in sugarcane mainly to study the genome organization and chromosome structure in somatic cells of intergeneric and interspecific hybrids of sugarcane. Recently in this crop the *in situ* hybridization techniques has been exploited in different avenues and providing novel in site to the genome organization, evolution and function.

Plant cytogenetics plays a vital role in a wide range of modern research areas, from structural and functional genomics to comparative evolutionary biology. With the fundamental and classical cytological techniques, pioneered more than a century ago, plant cytogenetics is still evolving and providing crucial and integrative tools for genetic and genomic research of many crops.

MARINE ALGAE – FOOD FOR HEALTH

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Ever increasing population, dwindling freshwater water resources and problems of farmers during unexpected flooding as well as monsoon failures not to speak of increased cost in farm inputs/activities result in a doubt of meeting the requirements of food for population expected in 2050 and beyond.

Algae are the organisms capable of meeting the nutrition requirements during population explosion coupled with shortfall in food production projected in another 30 years. Algae are anti-toxic (Eg. *Ulva* spp.), excellent source of protein, vitamins, minerals, fiber and a variety of polysaccharides having therapeutic values besides their use as raw materials for industries. They are increasingly explored to be used as bio-fertilizers (LSF-*Sargassum* spp. and *Turbinaria* spp.), bio-pesticides, bio-refineries (to produce valuable substances), bio-food colorants (phycocyanin, phycoerythrin and astxanthin) and a good source of bioactive compounds capable of acting against a variety of microbes including viruses and cancers.

Out of around 20,000 species of marine algae reported around the world only 221 are being used commercially. The latter include the algae used for food and as a source of phycocolloids numbering around 145 and 110 respectively. Of around 850 taxa reported from Indian coasts, only 85 are economically important seaweeds.

Algal polysaccharides such as ulvan and fucoidin are now known to have antiviral and anti- cancerous activities. Hence these are being explored for using in treatments against HIV.

However, the potential use of algae as a source of high protein containing food has so far a non starter in India though a few of them are used in certain preparations. Agar-agar, Carrageenan and Alginic acid containing foods are some of the examples. Jigir-thanda and jellies made using agar are also increasingly getting popular now a days. The other items explored in India include *Ulva* toffy, *Ulva* squash, mixed algae pickle, algae biriyani, algae thoran, porridge and halwa. A variety of seaweeds are used in several countries and island nations as food supplements. Kombu, Wakame, Nori or Zicai, Arame, Dulse, Kelp and Irish moss are some of the examples.

In India, seaweeds can be used for making puddings, rolls, salads, coconut jelly and other recipes such as algae cutlet (fresh *Sargasum wightii*, *Gracilaria corticata*, *Padina* and *Caulerpa racemosa*), Algae Briyani (*Sargasum wightii*, *Gracilaria corticata*, *Padina tetrastrum*, *Ulva fasciata*), agar-agar salad, almond bean curd, Japanese jelly dessert, Almond jelly, miniature moulded fruits, falooda and agar fruit jam.

Brown algae are called long-life algae, rich in polysaccharides, dietary fibers, vitamin B complex and 17 other amino acids. Freshly collected brown algae are used for phytotherapeutic purposes for their following properties: anti-hypothyroidism, antirheumatic, antibacterial, anticoagulant and antioxidant. These are useful in obesity control, as adjuvant in hypothyroidism and blood sugar control, to enhance over all metabolisms and increase basal metabolic rate and to reduce cholesterol levels – as infusion, decoction. Japanese call it the “long life vegetable”. Regular consumption of *Sargassum*, a brown alga aid in respiration, improve lung capacity and help in efficient gas exchange besides showing anti-stress and anti- fatigue effects. *Sargassum* has also found to be effective in anti-tumor activities. Regular intake of Kombu (*Laminaria*) result in lowered blood pressure and plaque removal from arteries. Algal polysaccharides such as agar-agar, carrageenan, sodium alginate and fucoidin on consumption trap heavy metals and aid in removal of these from our bodies. Hence, it is right time for us to exploit these ‘sea vegetables’ for a healthy living.

AEROBIOLOGY : IT'S CURRENT SCENARIO

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ABSTRACT

Aerobiology an interdisciplinary science in general is not much explored by many scientists of India. Its wonderful dimension with multidisciplinary approach connects scientists from the field of basic science, to veterinarians, agriculturists, engineers and medicos. However, due to non-availability of samplers and skills the discipline is not studied by many. Aerobiology is defined as studying about any biologicals suspended in atmosphere. This includes living materials like virus, bacteria, actinomycetes, algae, fungi or fungal spores, fern spores, pollen grains etc., The non living biological materials are also studied in the field of Aerobiology which includes insect wings, trichomes and enzymes apart from Volatile Organic Compounds (VOCs).

In this lecture, general introduction about Aerobiology, Basic Principles of Aerobiology, Applications in different fields like agriculture, veterinary science, human exposure and occupational hazard, Indoor Air Quality and other disciplines will be discussed. The lecture also provides the details of the samplers used in monitoring the atmosphere for the presence of biologicals. The details of novelty brought in by our group to the field of Aerobiology in designing new samplers and application of UAVs in monitoring airborne biologicals will also be discussed. Further, inclusion of Biosoot as a major Air component by the Aerobiologists will also be highlighted.

Keywords: Aerobiology, IAQ, Air Samplers, Occupational hazard, UAV, Biosoot.

INTEGRATED PROTEOMICS AND METABOLOMICS

APPROACHES: STATUS AND PROSPECTS

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Proteomics and metabolomics emerging as cutting edge functional biology disciplines with cost efficient and high throughput ways for molecular characterization and understanding plant adaptation mechanisms to stresses at cellular and developmental stages in different plant systems. The mechanisms of stress tolerance are complex due to the influence of multi genes and post transcriptional regulations. Furthermore stress conditions greatly affect gene expression which in turn cause modifications in the composition of plant

proteome and metabolomes, which cannot be investigated by genomics and transcriptomics approaches. In this context proteomics and metabolomics are promising approaches to enhance our understanding of functional molecules on specific aspects of multigene families and Post Translational Modifications (PTMs), instead of analyzing genetic code or transcript abundance which may not correlate with their corresponding proteins. These approaches have also found useful to unravel different pathways related to plant and seed development as well as symbiosis. In addition advancement of mass spectrometry (MS), NMR and bioinformatics approaches have allowed comprehensive identification, quantitation, validation and characterization of wide range of proteins and metabolites from specific organ/tissue/cell or common defense system. The integration of these "omics" approaches will providing clear understanding of differential changes in the levels of metabolites.

PAPER PRESENTATION - I

1. Tree Diversity and Above-ground Biomass in Pachaimalai Hills of Southern Eastern Ghats, Tamil Nadu, India

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ABSTRACT

Tree diversity, above-ground biomass and physiognomy were inventoried in Pachaimalai, a part of Southern Eastern Ghats in Tamil Nadu. In 13ha plot was established and each plot was sub-divided into two hundred and fifty (20m × 20m) workable sub plots, from ground level to above 1.3m. All trees ≥ 10 cm girth at breast height (GBH at 1.3 m) were measured. Basal area of trees also varied considerably among species. The aboveground biomass of trees in semi evergreen forests was estimated by using the allometric formula was developed through destructive sampling methods. A total 61 tree species (≥ 10 cm GBH) that belong to 56 genera and 30 families were recorded. In a total of 6124 woody stem trees density of species varied considerably among species. *Memecylon umbellatum* recorded the highest number of density (3512) individuals followed by *Buchanialanceolata* (754 trees), *Memecylonedule* (621 trees), *Buchanialanzan* (361) and *Psydraxdicoccos* (324 trees) from Pachaimalai. Physiognomically three types of forest tree were found that is i.e. Deciduous, dry deciduous and evergreen trees. In all, 29 evergreen species, 26 deciduous species and 6 dry deciduous species were there in study plot. The average wood density was 0.75±0.02 (ranging from 0.36±0.03 to 0.92±0.03 g cm³) *Albizialebeck* had highest Wood density value (0.92 g cm³) followed by *Diospyros buxifolia*, *Chloroxylonswietenia* (each 0.91gcm³), *Phoebe wightii*, *Buchanialanceolata* (each 0.90 g cm³) and *Strychnosnux-vomic*, *Terminalia tomentella*, *Lannea coromandelica*, *Buchanania axillaris* were recorded in Pachaimalai hills Southern Eastern Ghats of Tamil Nadu, India.

Keywords: Tree Diversity, Above-Ground Biomass, Tropical Forest, Physiognomy, Species richness.

2. Plants Used for Ethnobotanical Practices by Tribes of Kambakkam of Easternghats

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ABSTRACT

The study reports the surveyed of medicinal plants used by of village Tribe people of Kambakkam Forest (Easternghats), Andhra Pradesh in ethnobotanical practices. During this study information about the ethnobotanical plants were collected and preserved as herbarium specimens by follows the standard procedure. The plants were identified with help of some standard Floras. The specimens were deposited in the herbarium of Department of Plant Biology and Plant Biotechnology, Loganatha Narayanasamy Government College, Ponneri, Thiruvallur District. During the survey it was noted 123 plants were traditionally used by various diseases such as inflammation, wound healing, indigestion, dysentery, fever, swelling, bone fracture, diarrhoea, infertility, cold, cough, pneumonia, constipation, antimicrobial and milk yielding properties. The information provided in this study would bring new medicine development of ecofriendly, effective medicines to control human diseases in the future perspective. This study may be useful to protect and conserve the medicinal plants of Kambakkam Forest.

Keywords: Kambakkam Forest, Ethnobotanical, Herbarium.

3. A Novel Enumeration Record of Succulent Cactoideaen Members of Chennai

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ABSTRACT

The cacti are curious, often spiny plants constituting the family Cactaceae. These plants grow in xeric environment with limited supply of water and can survive for longer periods of drought. They are cultivated widely throughout the world for their bizarre forms, striking blossoms and often general hardiness. Most of the Cacti species are economically important that are easily raised from cuttings or from seeds. They can also be grafted easily with vigorous stocks. Many small cacti are suitable for home cultivation.

A preliminary attempt has been made to document the Cactoideaen Members in Chennai city. As studies on cacti in India so far are not so commendable on the aspects of research, this study has been conducted to record the diversity of cactus in Chennai locality. Nearly, 175 taxa were documented from Chennai and its neighborhood. These taxa are

reared as ornamentals for their shape, orientation of spines and for its beautiful blooms and edible fruits.

The documented cacti specimens were collected and described taxonomically. The growth habits keep varying due to environmental conditions and hence utmost attention has been given to describe them. Spines orientations were extensively studied under high magnification microscope. As this study on cacti is almost a pioneering attempt in Chennai which yielded a very fruitful results that signifies research on cactus could be a promising one and still more explorations on various aspects on cactus may be extended in future.

Keywords: Cactus, Taxonomy, Spines, Microscopic Studies.

4. A Note on *Pamburus Missionis* (Wight) Swingle (Rutaceae) - A Lesser Known Evergreen Tree Species Native to Tamil Nadu

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ABSTRACT

Robert Wight in 1833 described a new species from the sandy coastal regions of South India as *Limonia mission is* Wight (Rutaceae) but this species was later transferred to the genus *Atalantia* as *Atalantia mission is* by Oliver in 1861. Again, *A. mission is* Oliv. was transferred to *Pamburus mission is* in 1916 by Walter T. Swingle but Gamble and Fischer (1921) had retained the name *A. mission is* Oliv. in their publication '*The Flora of the Presidency of Madras*'. The genus *Atalantia* Correa is a wild relative of *Citrus* L. genus and hence *Atalantia* species are used as rootstocks for grafting purposes to produce commercially important Citrus fruit trees. Of the 4 *Atalantia* species reported by Gamble and Fischer (1921), *A. monophylla* (L.) DC. is a common species while *A. mission is* (Wight) Swingle is not common. It was the second author who brought the specimens of *A. missionis* Oliv. [as *A. monophylla* (L.) DC.] for identification to the first author who sees this specimen first time. While checking with *The Flora of the Presidency of Madras*, it was identified as *A. missionis* Oliv. – an uncommon species. Therefore, we were interested in studying this species in detail regarding its distribution, botanical characters etc. Intensive field studies were carried out in Kancheepuram District in Tamil Nadu, South India; specimens were collected, examined, taxonomical data recorded and herbarium prepared. Photographs were taken. Data were also gathered from the literature. *Pamburus mission is* (Wight) Swingle is distributed in Tamil Nadu and Sri Lanka near the Coast and in dry regions. In Tamil it is called 'Kuruntu'. The Type specimen was collected from the sandy coastal region in Thanjavur district of Tamil Nadu. We have seen this species abundantly growing in Agaramthen sacred grove, near the Lake and Palanthandalam Tropical Dry Evergreen Forest. Among the population, two big trees with GBH 1.18 m and 7.5 height, 71.3 cm and 6 m height respectively were recorded. It is a much branched small

armed evergreen tree with solitary axillary stout spines of up to 7.8 cm long. Leaves simple, alternate, petiolate (petiole 1.4 cm long), elliptic or oval or oblong-obovate, up to 12.2 cm long and 7.2 cm broad, thick and leathery, glabrous, glandular-punctate, mature leaf tip rounded or emarginate or juvenile leaves obtuse with a mucro pointed downward, base rounded, margin minutely crenate, lateral veins inconspicuous, dorsal and ventral surfaces similar in appearance; new flushes purple coloured, young leaves pale green and mature leaves dark green; midrib raised on both the surfaces. Flowers pedicellate (pedicel 1 cm long), white, fragrant, borne in axillary and terminal racemes of 5-6 cm long. Sepals 4 or 5, small, pointed. Petals 4 or 5, obovate, about 1 cm long. Gynoecium 1 cm long. Fruit small, sub-globose, green, ripening to orange-yellow, about 2.5 cm in diameter, 4-5-celled, containing 1 or 2 seeds embedded in a gummy fluid.

This species has antibacterial (Pavithra *et al.*, 2009), antifungal (Jaya Sree *et al.*, 2015) and antiarthritic (Peeriga and Chandrasekhar, 2017) activities.

5. Butterflies and Their Behaviour

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ABSTRACT

Butterflies are fascinating creatures with significant aesthetic values. They are diurnal and best pollinators with interesting behaviour patterns. They feed not only on the nectar of plants; they also feed on rotten fruits, decaying flesh, dung and the mineral nutrients from the soil. Butterflies can fly only when the temperature is above 27° C. When the temperature is lesser they expose the underside of the wings to gain heat for flight. Behaviour patterns in butterflies are exhibited by three “P”s: Puddling, Perching and Patrolling. Many species of butterflies maintain territories and chase other butterflies which encounter their boundary lines. They also exhibit sexual dimorphism and interesting mimicry patterns. Host plants play a major role in influencing the behaviour pattern of butterflies.

6. Studies on Traditional Medicinal Uses of Asteraceae Family Members in Pilathara Village, Kannur District, Kerala.

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ABSTRACT

Pilathara is a small village near Payyannur in Kannur district of Kerala. Asteraceae is the largest Dicot family and almost all species in this family are having medicinal properties. The Asteraceae family in this area is represented by 8 Genera and 8 Species. The Taxa are *Acmella uliginosa*, *Ageratum conyzoides*, *Chromolaena odorata*, *Eclipta alba*,

Grangeamaderaspatana, *Synedrellanodiflora*, *Tridaxprocumbens* and *Vernonia cineria*. These 8 Species are used in traditional medicines. *Acmella uliginosa* is used to cure Toothache. Its leaves are given to lactating mothers to increase the milk flow. The juice of *Ageratum conyzoides* is used to treat cuts, wounds and bruises. The leaves of *Chromolaena odorata* are crushed used to treat skin wounds and the leaves are also used to treat eye diseases. *Eclipta alba* is used as a remedy for hair-fall, and is also used as a liver tonic. The leaf-sap of *Grangeamadarespatana* is used to treat earache. The crushed leaves of *Synedrellanodiflora* have been used as a medicine for rheumatism and stomach troubles. *Tridaxprocumbens* is used as a wound healing agent. The juice of *Vernonia cineria* is used to treat diarrhea and stomach ache. Overall, all the plants available in this area is medicinally important.

7. Isolation and Characterisation of Microalgae from Kolavai Lake, Chengalpet, Kanchipuram, Tamil Nadu, India

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ABSTRACT

Algae are commonly grown in fresh water and Seawater and also grown in soils, inside the rocks and fur of sloths and polar bears. Commercial products are obtained from macroalgae for a very long time. Algae is found both in fresh and sea water. Several species grow in environments with high salt content. Some algae grow within a few hundred meters of the water surface, others inhabit the subsurface water column and a few thrive at the limits of the photic zone (which is often 200-300 m below the surface). Algae occur in low alkaline water (as low 10 ppm) called fresh water. Algae mostly autotrophic found in all kinds of aquatic bodies. Algae vary in shape, color and are found in a large range of habitats. Algae are large and diverse group of simple autotrophic organisms, ranging from unicellular to multicellular forms. In aquatic ecosystem phytoplanktons play an important role in the ecology of water bodies.

Microalgae are also important source of vitamins, minerals, proteins, polyunsaturated fatty acids, antioxidants, etc. The present investigation carried out a diversity of freshwater microalgae in the Kolavai Lake, Chengalpattu, Kanchipuram District, Tamilnadu, India. Microalgae are most widespread organism in the freshwater environment and they have various functions in the environment. The microalgae play major role in the nutrient recycling in the environment. The micro algal biodiversity studies not only serve as indicator of water quality also help to tap the biotechnological potential of the organisms. This paper deals with isolation and characterisation of microalgae in fresh water sample collected from different spots of Kolavai Lake. Key words: Freshwater microalgae, Biodiversity, Kolavai Lake.

8. Phylogeny Unravels the Species Delimitation in *Nothapodytes nimmoniana* (J. Graham) Mabb. Based on Chloroplast and Nuclear Markers

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ABSTRACT

Camptothecin (CPT), a plant based natural product is in high global demand as its semi-synthetic compounds i.e. Topotecan and Irinotecan produce anti-cancer drugs. In India, CPT is sourced from the bark of *Nothapodytes nimmoniana* (family Icacinaceae) from Western Ghats where the natural populations are shrunk and has become an endangered species. Moreover, the nomenclatural changes of genus *Mappia* has resulted into merging of its five species into one species i.e. *N. nimmonina* under the Asian genus *Nothapodytes* in Indian subcontinent. But there is no systematics studies that exist to derive either the concordance or discordance to the above changes. Hence, in this study, we have experimented those five synonymized species of *Mappia* by considering them as different ecotypes of *N. nimmoniana* since they are restricted to unique ecotones. Molecular phylogeny was carried out to analyse these conspecifics using both the plastid regions (*ndhF*, *trnL-trnF* and *psbA-trnH*) and nuclear region (ITS2). Parsimony analysis resulted in species divergence across the genetic markers that were used in this study. Thus the study delimits the species boundaries into three different lineages such as *Mappia tomentosa*, *M. foetida* and *M. ovata*. Further, the taxonomic treatment and lectotypification has designated them as distinct species.

Keywords: Camptothecin, DNA barcodes, *Nothapodytes nimmoniana*, Ecotypes, *Mappia*

9. Microscopic Standards for Botanical Identify of the BARK Samples of the Conifers *Cupressus lawsoniana* A.Murray.

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ABSTRACT

Bark is a complex tissue-system comprising of outer zone of periderm or rhytidome and inner zone of secondary phloem. Botanical identification of tree; in absence of flowers, fruits and seeds is much difficult. So, one has to depend upon the microscopic features of the wood/bark for Botanical diagnosis of the taxa. An attempt on the comprehensive studies on the surface features and microscopic features of bark of conifer found in the Nilgiri Hills of West Ghats of India. The conifer species taken up for the study is *Cupressus lawsoniana* A.Murray. Family = Cupressaceae. The results of the study showed that the bark of *Cupressus lawsoniana* includes, surface features and microscopic features of Secondary Phloem tissues. The bark of innermost part showed cedar as brown with flat ridges and furrows. It includes noncollapsed phloem. Tannin occurs in most of the parenchyma cells which are about 30µm in diameter. Calcium oxalate crystals are seen in the collapsed phloem. These characters clearly distinguish the conifer from other plants.

Keywords: Conifer, *Cupressus lawsoniana* Bark; Tannin; Calcium Oxalate, Crystal.

10. Medicinal Values of *Eclipta Alba*, its Distribution and Commercialization in the World Market

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ABSTRACT

Eclipta alba is an annual herb commonly found in paddy field as a weed. It belongs to the family Asteraceae (Sunflower family). It is widely distributed in the tropical and sub-tropical parts of the world including India. It has many synonyms like *Eclipta prostrata*, *Eclipta erecta*, etc. The vernacular names of the plants are False Daisy, Bhringaraj (Hindi), Kesharaj (Manipuri), Karisalankanni (Tamil), and Galagara (Telugu). *Eclipta alba* has traditional uses with success in Ayurvedic medicine. This plant is one of the Hindu's 'Ten auspicious flowers' and are called as "The king of hair". The dried whole plant is used in traditional medicine. Many phytochemical components are present in *Eclipta alba* such as coumestans, polypeptides, polyacetylene, thiophene derivatives, steroids, sterols, triterpenes, flavonoids, wedelolactone, eclalbasaponins, α -amyrin, ursolic acid, oleanolic acid, luteolin and apigenin. The plant has many diverse medicinal value and is commonly used for treatment of gastrointestinal disorders, respiratory tract disorder (including asthma), fever, hair loss and graying of hair, liver disorders (including jaundice), skin disorder and spleen enlargement.

The traditional ayurvedic practitioners of India consider this plant as hepatoprotective. Oleanolic acid is found in the plant known for both anti-diabetic and anticancer effects. It is directly modulating the enzyme connected with insulin biosynthesis, secretion and signaling. *Eclipta alba* which promotes hair growth, strengthen hair, prevents graying and dandruff and it is also effecting in fighting bacterial and fungal infection. The oil which is extracted from the plant is used to increase the number of hair follicles. It has vitamin E, which is known to fight against the free radicals that can impede hair growth. The juice of *Eclipta alba* with honey which helps to prevent the onset of senility and its oil as the best medicated massage oils for rejuvenation therapies. The leaves contain stigmasterol, α -Ferthienyl methanol and demethyl-wedelolactone-7-glucoside. *Eclipta alba*, whole plant part powder is available in the market which has very high market values. It is also commercialized in the form of hair oil, shampoos, hair lotions, tonics, hair serum and shikakai powder as hair growth supplements. It is an excellent plant with lots of medicinal values and it is especially good for Indian hair growth and also for their health needs.

Keywords: Ayurvedic Medicine, Coumestans, Polypeptides, Polyacetylene, Thiopene Derivatives, Steroids, Flavonoids.

11. Studies on Morphological Structures of Root Nodules of the wild Available *Crotalaria* Species (*Crotalaria retusa* L. and *Crotalaria trifoliastrum* Willd.)

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ABSTRACT

Soil is a natural habitat of variety of agricultural beneficial microorganisms. Nitrogen fixation is carried out particularly by microorganisms in association with plant roots. The flavonoids are secreted by the root of legume plant. They help *Rhizobia* in the infection stage of their symbiotic relationship with legumes. The *Rhizobia* are living in soil. They are able to sense the flavonoids and this triggers the secretion of Nod factors, which in turn are recognized by the host plant and can lead to root hair deformation and several cellular responses such as ion fluxes and the formation of a root nodule. Their development in legume is relates to their root structure. They fix molecular nitrogen in the most of the legume plants. Their efficiency of nitrogen fixation is dependent on legume type, soil pH, temperatures and soil conditions. They help nutrient acquisition and promote plant health. They induce systemic acquired resistance of crop species and protection against soil borne pathogens. The genus *Crotalaria* belongs to the family Leguminosae. In the present study, the morphological structure of root nodules of wild available *Crotalaria* species (*C. retusa*L. and *C .trifoliastrum* Willd.). The morphological structure (shape, colour, size and their location) of root nodules were analyzed just before flowering. The nodules become senescent after a period of nitrogen fixation, decay of tissue sets in liberating motile forms of *Rhizobia* in the soil, which help to improve soil fertility.

Keywords: *Crotalaria* species, Legumes, Rhizobia, Nitrogen Fixation, Soil Fertility.

12. Studies on Food Values and Nutraceutic Values of Some Selected Galls

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ABSTRACT

The plant galls have not gained as much of popularity as other vegetables in the food and nutraceutics arena. Many galls, especially certain smut fungal galls have folklore claims for food values. Scientific evaluations have also affirmed the food and nutraceutical potential of galls. An aquatic grass, *Zizania latifolia* (Gramineae), when infected by smut fungus, *Ustilago esculenta* develop a fleshy edible gall possessing unique flavour and delicacy. This gall is used as vegetable in Taiwan, South Korea and Manipal in India. Paddy grains infested by *Ustilago* sp. give rise to swollen brightly coloured pod like galls, which is called "*paddy fruits*", are eaten by farmers in Tamilnadu. A rust fungus

Ravenelia esculenta causes edible gall on *Acacia eburnea* in Maharashtra, India. The aforesaid galls are only few to mention. Many more edible galls are yet to be discovered from different parts of India.

Keywords: Plant Galls, Neutraceutical, Folklore, Fungal Galls.

13. Anatomical Studies of *Borreria hispida* (L.) K. Schum – An Ethnobotanically Important Medicinal Plant

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ABSTRACT

Borreria hispida (L.) K. Schum a member of Rubiaceae, is an important medicinal plant used by tribal people. Each plant species has some unique anatomical structures which essential for quality control of herbal drugs to prevent the adulteration of raw material. Anatomical studies of *B.hispida* the leaf shows dorsiventral, mesomorphic leaf with less prominent midrib. The stomata are typically of paracytic type (Rubiaceous). The young stem circular in outline with four angled along the corners. The epidermal layer is followed by the cortical region consists of five or six layers of wide parenchyma cells. The vascular cylinder is circular, thin and hollow and consists of short radial lines of vessels and xylem fibres and the pith is present in the centre. When the stem attained secondary growth shows periderm. The cortex is well preserved and includes five or six layers of wide, angular secondary phloem. Secondary xylem is a thick and dense hollow cylinder enclosing central core of narrow pith. The T.S of root was circular with rough surface due to the disintegration of the epidermal and sub epidermal layers. The outer part of the root included cortex and secondary phloem and secondary xylem consists of secondary and primary xylem. Vessels are arranged in long radial multiples or less frequently or in solitary condition. Presence of raphides and calcium oxalate crystals in the root and the stem and the length of vessels are long like fibres are the unique features of *B. hispida*.

Keywords: *Borreria hispida*, Paracytic Stomata, Rubiaceous Stomata, Raphides and Calcium Oxalate.

14. Formulary and Folklore Herbs that are used in Effective Healing Therapy

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ABSTRACT

The modern medicine has much quicker healing property and it has also proved that it causes health hazards to body which consumes them. Nature has blessed our life with healing therapy which can be used not as a medicine but can be taken in the form of our food daily in order to avoid falling sick. There are number of herbs which we use in our daily requirement in the food preparation in a traditional method. If the food are not prepared in the proper method it becomes the ban instead of boon. The present study is to highlight few but very basic and essential herbs without which the no food can be made. These are some of the herbs such as curry leaves, coriander leaves, fenugreek leaves along with the seeds also used, and mint leaves, small onions and mustard seeds are always present in every kitchen. These herbs are nothing but the formulary and folklore medicine. The healing benefits and these herbs are being discussed in the current paper. The therapeutic values and the proper usage methods is further shown. Herbs that not only heals but nourishes and gives beauty and energy to the living beings and when these herbs get decompose it gives nourishment for the soil and makes the soil fertile.

Keywords: Curry Leaves, Coriander Leaves, Fenugreek Leaves, and Mint Leaves, Healing Herbs.

15. Morphological and Leaf Anatomical Studies of *Hildegardia populifolia* (Roxb.&Wall.) Schott&Endl.[=*Sterculia*

populifolia roxb. & wall.]

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ABSTRACT

Hildegardia populifolia (Roxb. & Wall.) Schott & Endl., [= *Sterculia populifolia* Roxb.&Wall.] called 'Malaipuvarasu' in Tamil is an critically endangered deciduous tree endemic to southern Eastern Ghats found in Andhra Pradesh, Tamil Nadu (Salem Hills) and Karnataka (in areas bordering Anantapur District of Andhra Pradesh). The extracts of stem bark and leaves are used as an antidote to dog bites and to curing malaria in the traditional systems of medicine in Tamil Nadu and Andhra Pradesh and also used in various ayurvedic commercial preparations. However, the isomorphic nature of its leaves to

Thespesia populnea (L.) Soland ex Correa creates confusion among researchers etc. Hence we have undertaken the present study. Studies were carried out at Advanced Institute for Wildlife Conservation, Vandalur, near Chennai during 2018. The results showed that the stem bark is smooth, pale green and fiber-rich; the wood is silverfish white; the branchlets angular and warty. The leaves are alternate, simple, long-petioled (6–12 cm), broadly ovate with deep cordate base and acuminate to caudate acuminate tip, entire, palmately 7- nerved and glabrous. Flowering occurs when the tree is leafless during February-April for about a month. Inflorescence is axillary and terminal racemose panicle with andromonoecious flowers. Flowers pedicellate, scarlet red, 1.2–1.4 cm long and 3 mm wide, apetalous, campanulate, hairy. Calyx is petaloid, lobed, lobes linear-spathulate, free nearly to the base. Stamens 10, borne around the ovary on 4 mm long creamy-white androgynophore in bisexual flowers and on the top of a 8 mm long slender creamy-white androphore in male flowers; anthers sessile, golden yellow and dithecous. Style solitary, tipped with five-lobed pale yellow semi-wet stigma. Fruits stipitate winged inflated ventricose papery follicles, initially rayish, turning to rusty brown and then green, finally rayish-brown, covered with pubescent hairs. Seeds 1-2 per follicle, ovate-oblong. Anatomically, the leaves have mucilage ducts, stiff veins, and thin lamina made up of with short-columnar palisade cells; in petiole 10 vascular bundles arranged like a ring, vessels homogeneous, and axial parenchyma and one medullary bundle present; midrib abaxial side is cup-shaped, vascular strand is broadly ovate with two leaf traces.

16. நிலப்பகுப்பும் தாவரங்களும் – தமிழிலக்கியச்சான்றுகளின் வழி ...

முனைவர் ப.பத்மினி

இணைப்பேராசிரியர், தமிழ்த்துறை, இராணிமேரி கல்லூரி,
சென்னை.4

தமிழர்களின் வாழ்வில் இயற்கை பிரிக்க முடியாத பங்கு வகிக்கின்றது என்பது நம் தொல் இலக்கியங்களின் வழியாக அறிய வருகின்ற உண்மையாகும். மரங்களும் செடிகளும் மலர்களும் கொடிகளும் நீர்நிலைகளும் மக்களின் உணர்வோடு இயைந்து உறவாடுவதோடு மக்களின் மனநிலையைப் பிரதிபலிக்கக் கூடியதாகவும் தமிழ் இலக்கியங்கள் காட்டுகின்றன. இன்னும் நுணுகி ஆராய்கின்ற போது தொல்காப்பியர் வகுத்துள்ள நிலப்பரப் பேதாவரங்களின் பண்புகளை அடிப்படையாகக் கொண்டதுதான் என்பது ஆச்சரியமுட்டக்கூடியதாகும். இந்தத்தாவரங்களின் அடிப்படைப் பண்புகளை மையமாகக் கொண்டு

நிலங்களைப்பகுத்ததோடு அவை மனித மனங்களோடு எவ்வாறு நெருக்கமாக உரையாடுகிறது என்பதையும் அறிய விழைவதேஇக்கட்டுரையின் நோக்கமாக உள்ளது.

தொல்காப்பியர் நிலங்களை முதலில் நான்காகப் பிரித்துப் பின்பு ஐந்து என்று முடிவாகக் கூறுகிறார். முல்லை, குறிஞ்சி, மருதம் , நெய்தல், என நான்கு நிலங்களைப் பிரித்துப் பின்பு பாலை நிலத்தோடு சேர்த்து தமிழகத்தின்புவிப்பரப்பினை ஐந்து வகையாகப்பிரிக்கிறார். இவற்றில் முல்லை நிலம் என்பது காடும்காட்டைச் சார்ந்த சமவெளிப்பரப்புமாகும். குறிஞ்சி என்பது மலைப்பிரதேசமாகும். மருதம் என்பது மக்கள் பெரும்பான்மையினர்வாழக்கூடியஆறு, குளங்கள் நிரம்பிய வேளாண்மை செய்யக் கூடிய பகுதியாகும். நெய்தல் என்பது கடற்கரையைமையமிட்டபகுதியாகும். இந்த

நிலங்களுக்குச்சூட்டப்பட்டபெயர்களைப்பார்த்தோமென்றால் அவை அனைத்தும் தாவரங்களின்பெயர்களேயாகும். இருண்டு கிடக்கக் கூடிய காட்டுப் பகுதிகளில் கார்காலத்தில்வெண்மையாகப்பூத்திருக்கும் முல்லை மலரும், மலைப்பகுதிகளில் பன்னிரண்டு வருடங்களுக்கு ஒருமுறை பூக்கக்கூடிய குறிஞ்சி மலரும், மக்கள் வசிக்கக் கூடிய பகுதிகளிலும் ஆற்றங்கரை, குளக்கரைபகுதிகளிலும் ஓங்கி வளரக்கூடியமருதமரமும், கடற்கரையில் பெண்களின் கண்கள் போன்றுகாணப்படுகின்ற நெய்தல் மலருமே நான்கு நிலங்களுக்குச்சூட்டப்பட்டுள்ளது.

இதில் பாலை நிலம் தனித்துவம் கூடியது. ஏனெனில் இன்று நாம் புரிந்து கொண்டிருக்கக் கூடிய பாலை நிலம் என்பதும் தொல்காப்பியர் கூறிய பாலை நிலப்பண்புகள் என்பதும் வெவ்வேறு. தொல்காப்பியர் கூறிய பாலை நிலம் என்பது ஒவ்வொரு நிலமும் தனக்குள் கொண்டிருக்கக் கூடிய வறண்ட பண்புகளைக் குறிப்பது. இன்னும் தெளிவாகக் கூறப்போனால் ஒவ்வொரு மென்மையான மனதிற்குள்ளும் ஒரு கடினமான மனதிருக்கிறதுஎன்பதைப் போல. எனவே தொல்காப்பியர்குறிப்பிட்டுள்ள படி ‘ வறண்ட பாலை ‘ என்பது,

ஓவ்வொரு நிலத்திற்கும் உண்டான வறட்சிக்காலத்தைக் குறிப்பது. அவ்வகையானபண்பிற்கும்தொல்காப்பியர் “பாலை” என்னும் மரத்தின் பெயரையேசூட்டுகிறார். பாலை மரத்தின் தனித்தன்மை

என்னவெனில்எந்தக்காலத்தும்வாடாமல்இருப்பதே. இவ்வாறு தாவரங்களோடு நிலங்களை இணைத்திருக்கும்தொல்காப்பியர் அவற்றைமனித உணர்வுகளோடும் எவ்வாறு இணைக்கிறார் என்னும் கருத்தினைவிரித்துரைக்கும் வழி இயற்கையும் மனிதனும் கொண்டிருக்கக் கூடிய நெருக்கமானஉறவினை அறிந்து கொள்ள இயலும்.

PAPER PRESENTATION -II

17. Hepatoprotective and Antioxidant Effects of *Ecbolium viride*, *Gendarussa vulgaris* and *Sphaeranthus amaranthoides* in NASH Induced Hepatotoxicity in Albino Wister Rats

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ABSTRACT

Non-alcoholic steatohepatitis (NASH) caused due to over-nutrition, decreased physical activity with disproportionate high-fat food intake, obesity, type II diabetes mellitus (T2DM), and the metabolic syndrome characterized by steatosis, lobular inflammation and progressive pericellular fibrosis. This hepatic disease cannot be remedied by chemicals its addition may lead to complication. Hence herbal drug is the possible remedy. The hepatoprotective effect of *Ecbolium viride*, *Gendarussa vulgaris* and *Sphaeranthus amaranthoides* were monitored by estimating the Triglycerides(TG), Total cholesterol(TC), Low density lipoprotein(LDL), High density lipoprotein (HDL), Aspartate transaminases (AST), Alanine transaminases (ALT), Alkaline phosphatases (ALP), and Lactate dehydrogenases (LDH). Plant extracts singly or in combination at a dose of 2 g/kg significantly prevented the increase in serum level in liver. The antioxidant enzymes following D- Galactosamine and diet induced hepatotoxicity in albino rats was reversed by plant extracts.

Keywords: *Ecbolium viride*, *Gendarussa vulgaris*, *Sphaeranthus amaranthoides*, NASH, Hepatoprotection, D-Galactosamine.

18. Pharmacognostic and Pathological Studies on *Atalantia Monophylla* (Rutaceae)

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ABSTRACT

Atalantiamonophylla(L.) Corr. (Rutaceae) is a dominant element permeating the semi-arid belts of Eastern Ghats. It warrants our attention on account of the folklore claims for its pharmaceutical efficacies as well as a curious, hitherto unrecorded midge induced shoot axis gall, so prevalent on the plant. The present investigation furnishes the protocol parameters of anatomical profile of leaf, stem, petiole and bark of *A. monophylla* for diagnosis of the plant in vegetative condition. The morbid anatomy of the shoot axis gall which involves certain striking cytodifferentiation deficiencies, is also dealt with.

Keywords: *Atalantiamonophylla*, Rutaceae, Pharmacognosy, Shoot-axis gall, Gall Midge.

19. Phytochemical Screening and GC-MS Analysis of Whole Plant Extract of *Dendrophthoe falcate* (L.f) Ettingsh.

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ABSTRACT

The study was implemented to actuate the chemical components of *Dendrophthoe falcate* using GC-MS analysis on a GC-MS -5975C agilent system comprising an auto sampler and gas chromatography interfaced to a mass spectrometer instrument. Our results of GC-MS compounds in the extract was relevant to the National Institute of Standards and Technology (NIST) library. The GCMS analysis of ethanolic extract of the *Dendrophthoe falcate* whole plant confess the presence of twenty six chemical constituents Bicyclo(3.1.1)2,6,6-triheptanes; 1,4-Eicosadiene, Cyclohexane, 7-Thiabicyclo(4.1.0) heptanes, Dibutylphthalate; 2-Benzenedicarboxylic acid; Phytol; Squalene; Nonacosane; Eicosane; Heneicosane; 2,6,10,14,18-Pentamethyl-2,6,10,14,18 Eicosapentaene; 2-methyl-3-(3-methyl-but-2-nyl)-2-(4-methyl-pent-3-enyl)-oxetane; beta-Tocopherol; Vitamin E; gamma-sitosterol and betasitosterol; ethyllacridine; benzene; anthracene; benzo(h)quinoline; cyclotrisiloxane; beta-amyrin; alpha-amyrin; 1,2,5-oxadiazol-3-amine; olean-12-ene; 1,2,5-oxadiazol-3-amine and 9,19-cycloergost-24(28)-en-3-ol. Qualitative phytochemical screening of the ethanolic extract of the whole plant revealed the presence of many compounds such as alkaloids, coumarins, flavonoids, terpenoids, phenols and cardiac glycosides. Hence it can be considered as a promising

source for phytopharmaceutical exploitation. However the isolation of individual phytochemical components and subjecting them to biological assays will definitely yield effective results to cure many ailments.

20. Analysis of Antibacterial Activity of Leaf and Callus of *Pisonia grandis*

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ABSTRACT

The aqueous leaf extract and callus extract of *Pisonia grandis* at different concentrations (10 mg, 20 mg and 30 mg /ml) was tested for its antimicrobial activity against pathogenic bacterial strains such as *Bacillus subtilis*, *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli* and *Pseudomonas aeruginosa*. Antibacterial activity was measured using the standard disc diffusion method. For antimicrobial assay, all bacterial strains were grown in Muller Hinton Broth Medium (Hi Media) for 24 h at 37°C and plated on Mueller Hinton Agar (Hi Media). Sterile disc (Hi Media, 6 mm in diameter) were placed on the agar medium to load 20 µl of different concentration (10 -30 mg /ml) of aqueous leaf extracts and aqueous callus extract of *Pisonia grandis*. Inhibition zone was measured after incubation for 24 h at 37° C. The gentamycin is used as a positive control and the solvent (Aqueous) is used as negative control. The aqueous leaf extract inhibited the growth of *Bacillus subtilis* and the inhibition zone was 12mm at the concentration of 20 µl and 14 mm at the concentration of 30 µl whereas the aqueous callus extract inhibits the growth of *Bacillus subtilis* and the zone of inhibition was 9 mm at the concentration of 20 mg/ml and 13 mm at the concentration of 30 mg/ml. In case of *Bacillus cereus* the inhibition zone was 11mm and 13 mm at the concentration of 20 mg/ml and 30 mg/ml respectively. The aqueous callus extract inhibits the of *Bacillus cereus* and the zone of inhibition was to 11mm at the concentration of 30mg/ml. The growth of *Pseudomonas aeruginosa* and *Staphylococcus aureus* was inhibited by the aqueous leaf extract and the zone of inhibition was 10 mm and 12 mm at the concentration of 20 mg/ml and 30 mg/ml respectively. The callus extract inhibits the growth of *Pseudomonas aeruginosa* to 9 mm at the concentration of 30 mg/ml and *Staphylococcus aureus* to 10 mm at the concentration of 30 mg/ml. The aqueous leaf extract and callus extract does not show any inhibitory effect on *E.coli*. The *Bacillus aureus* and *Bacillus cereus* was found to be more susceptible to the extract when compared to *Pseudomonas aeruginosa* and *Staphylococcus aureus*.

21. Phytochemicals and Histochemical Analysis of Aqueous Flowers Extracts of Four *Bauhinia* species (*B. acuminata* L., *B. purpurpea* L., *B. racemosa* L. and *B. tomentosa* L.) Caesalpiniaceae

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ABSTRACT

Flowering plants naturally synthesis and preserve a variety of biochemical products, which provide definite physiological action on the human body much efficient and have no side effects. The flower consists of an axis bearing appendages. They play a crucial role in medicinal and ornamental have leads to the enhancement of health care of mankind. The medicinal value of the flowers lies in some chemical substances that produce a definite physiological action on the human body. The genus *Bauhinia* is a large genus belongs to the family Caesalpiniaceae. The present study is investigates for its biochemical composition of flowers of *Bauhinia acuminata* L., *Bauhinia purpurpea* L., *Bauhinia racemosa* L. and *Bauhinia tomentosa* L. They are wide application in food, medicinal, ornamental and worship purposes. The fresh aqueous extract revealed the presence of the primary metabolites (Reducing sugar Proteins, Fats) and secondary metabolites (alkaloids, coumarins, phenolic compounds, flavonoids, tannins, phlobatannins, saponins, steroids, diterpenoids and triterpenoids which are known to exhibit medicinal as well as physiological activities. Histochemically identify the mucilage compounds.

Keywords: *Bauhinia* sp., Medicinal Plants, Phytochemicals, Histochemical, Flower Extract.

22. Screening of Phytochemicals and *in-vitro* Antioxidant Activity of *Cannanga odorata* (lam.) Hook. F. & Thomson and *callophyllum inophyllum* L.

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ABSTRACT

The present study evaluates the phytochemicals and *in vitro* antioxidant properties of alcoholic and aqueous extract of leaves of *Canangaodorata* and *Callophylluminophyllum*. The antioxidant activity was determined by DPPH radical scavenging activity, superoxide anion scavenging activity, nitric oxide scavenging activity and ferric reducing antioxidant power assay. The phytochemical analysis revealed the presence of medicinally active compounds alkaloids, carbohydrates, glycosides, saponin, phenols, tannins, flavanoids, proteins, steroids and coumarins in both the plants. The DPPH radical scavenging activity was higher 70.3% for *Canangaodorata* and 68.5% for *Callophylluminophyllum* when the concentration was increased. The reducing power of the extract increased with the increasing concentration. The *in vitro* study clearly indicates

that ethalonic extract of the leaf extracts showed significant antioxidant activity when compared with the aqueous extract.

Keywords: Phytochemicals, Antioxidant Activity, *Cannanga odorata*

23. Phytochemical and Anti-inflammatory Studies of the Seaweeds – *Turbinariaornata* and *Halymeniadilatata*

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ABSTRACT

Phytochemical tests were carried out on the aqueous, acetone and ethanol extract of the powdered specimens, *Turbinaria ornata*, genus of brown algae and *Halymeniadilatata*, genus of red algae possess several therapeutic activities, using standard procedure as described by Sofowara (1993), Trease and Evans (1989) and Harborne (1973). The tests showed presence of carbohydrate, saponin, glycoside, proteins, amino acids, phenolic compounds, flavanoids and tannins. *Turbinariaornata* revealed presence of saponins, whereas absent in *Halymeniadilatata*. The quantitative analysis of solvent extracts of brown algae and red algae has been screened. The two algae showed explicit anti-inflammatory effects by determination different inflammation parameters as Superoxide dismutase (SOD), Malondialdehyde (MDA), catalase, Glutathione (GSH), Interleukin-6 (IL-6) and Tumor necrosis factor (TNF- α). Further research studies are upcoming to determine its maximum therapeutic potential.

Keywords: Brown Algae, Red Algae, Phytochemicals and Anti-inflammatory.

24. Phytochemical Screening and Antioxidant Activity of Leaf Extracts of *Morindatinctoria* Roxb.

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ABSTRACT

Medicinal plants constitute a source of raw materials for most of the drugs which play an important role in the field of health care. In the present study, the phytochemical analysis of *M. tinctoria* leaf extract showed the presence of tannins, saponins, flavonoids, alkaloids, quinones, glycosides, cardio glycosides, phenols, coumarins and anthocyanins in ethanol solvent whereas in aqueous extract except coumarins, quinones and anthocyanins all the other compounds were present. The antioxidant activity was assessed by DPPH free radical scavenging method. The results showed that the activity was increased with increasing concentration of the leaf extracts. 89% of scavenging activity was observed in *M.tinctoria* leaf. The lowest IC50 value with highest antioxidant activity was found. The high radical scavenging activity may be due to the presence of phenol content in the leaf extracts of *M.tinctoria*.

25. Antimicrobial Activity of Ethanolic Root Extract of *Diospyros Ferrea* against Some Pathogenic Microorganisms

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ABSTRACT

Diospyros ferrea is a plant used in the traditional medicine for treatment of fever, snake bite, Diabetics and cancer diseases. This study was conducted to carry out preliminary phytochemical analysis and *in vitro* antimicrobial activities of ethanol and aqueous root extract of *Diospyros ferrea*. Qualitative phytochemical analysis for tannins, saponin, terpenoids, flavonoids, alkaloids, glycosides, steroids, phenols, and reducing sugar was done using standard methods. The antimicrobial activities of the extracts were tested against four micro-organisms; *Escherichia coli*, *Staphylococcus aureus*, *Shigella dysenteriae*, and *Salmonella typhi*. Agar well diffusion method was used for the antimicrobial studies.

Phytochemical screening of root extract showed the presence of tannin, saponin, terpenoid, flavonoid, alkaloids, glycoside, steroid, reducing sugar, and phenol. The result of the antimicrobial studies showed that the aqueous root extract has higher antimicrobial activity ranging from (2-10 mm) on the tested microorganisms than aqueous root bark extract (4-8 mm), while for ethanol root extract has almost the same effect or antimicrobial activity on the tested pathogens ranging from (2-13 mm) which is having higher activity compared to the aqueous extracts. The Minimum inhibitory concentration (MIC) and Minimum bactericidal concentration (MBC) of both the extracts were found to be 50 mg/mL and 100 mg/mL respectively.

From this study, it can, therefore, be concluded that the ethanolic root extract is a potential antimicrobial agent which supports the claim of the traditional users of this plant in herbal medicine for the treatment of diseases that are of microbial origin.

Keywords: *Diospyros ferrea* Root Ethanol Extract MIC

26. Preliminary Phytochemical Analysis, Antioxidant and Anti-haemolytic Activity from Leaf and Callus Extract of *Eupatorium triplinerve*

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ABSTRACT

The present study was performed to investigate the phytochemical screening, antioxidant and anti-haemolytic activity from the leaf of mother plant, callus and *in vitro* leaf extract of *Eupatorium triplinerve*. The leaf and callus extracts were evaluated for antioxidant activities by DPPH (1, 1-diphenyl-2-picryl-hydrazyl) radical scavenging

assay. Among three different extracts with ethanol solvent used, maximum antioxidant activity was found in ethanol callus extract (19.76%) from Azhiyar accession followed by others. The maximum callus extract was found to be 85% at a dose of 50mg/ml. The ethanol callus extract of *Eupatorium triplinerve* exhibited high level of anti-haemolytic activity. The existence of high concentration of all secondary metabolites in ethanol extract with high percentage yield, implicates its therapeutic action. The generated data implicates the wide application of *Eupatorium triplinerve* as traditional and folk medicine with its phytochemical constituents in treating various diseases and posses potential anti-haemolytic activity and lead to isolation of novel compounds.

Keywords: *Eupatorium triplinerve*, Callus, *In-vitro* Tissue Culture, Plant Regeneration.

27. Preliminary Phytochemical Analysis and Antibacterial Activities of *Cardiospermum halicacabum* . L (Sapindaceae)

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ABSTRACT

Cardiospermum halicacabum is one of the important medicinal plant collected in Loganatha Narayanasamy Government College, Ponneri, Thiruvallur District, used in both traditionally and scientifically for the treatment of rheumatism, nervous diseases, stiffness of the limbs and Snake bite. The present investigation was carried out to screening preliminary phytochemical analysis and to evaluate the Antibacterial activities of *Cardiospermum halicacabum* against the clinical pathogens *Escherichia coli*, *Bacillus cereus*, and *Pseudomonas aeruginosa* by using agar well diffusion method. Phytochemical screening is of high importance to establish the claims of medicinal uses by traditional and folk medicine practitioners.

Phytochemical extraction of *Cardiospermum halicacabum* was successively with different organic solvents like Acetone, Methanol, Ethanol and Petroleum ether which shows many valuable Phytochemicals (Alkaloids, Flavonoids, Saponin, Steroids, Tannins and Polyphenols) are present. Different concentrations of Acetone, Methanol, Ethanol and Petroleum ether extracts were used for antibacterial activity. Acetone and Methanol showed a wide spectrum of antibacterial properties. It was found to inhibit the growth of bacterial strains.

Keywords: *Cardiospermum halicacabum*, Antibacterial, Phytochemical, Clinical Pathogens, Agar Well Diffusion Method.

28. Preliminary Phytochemistry and Antibacterial Activities of *Chara* . L (Chlorophyceae)

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ABSTRACT

The freshwater algae are a promising source of bioactive natural products. The present study was carried out to screening preliminary Phytochemical analysis and to evaluate the Antibacterial activities of *Chara* against the pathogens *Xanthomonas campestris*, *Escherichia coli*, *Bacillus cereus*, and *Pseudomonas aeruginosa* by using Agar well diffusion method. Incubation of agar plates for 19 hrs at 37⁰C supplemented with 4 test bacteria along with 2 mg / ml methonolic extract revealed inhibitory effect showing highest inhibition zone (15 mm) in case of *Xanthomonas campestris* when compare to *Escherichia coli*, *Bacillus cereus* and *Pseudomonas aeruginosa*. The preliminary Phytochemical analysis the methonolic extract shows positive confirmation reaction for Alkaloids, Saponin, Carbohydrate, Flavonoids, Lipids, Glycosides, Phenols, Sterols, Tannins and oils. **Keywords:** *Chara*, Antibacterial, Phytochemical, Agar Well Diffusion Method, Freshwater Algae.

29. Phytochemical and Antioxidant Screening of *Terminalia catappa*, Linn.

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ABSTRACT

Terminalia catappa, Linn. belonging to the family Combretaceae, is also known as country-almond, Indian-almond, Malabar-almond, sea-almond, and tropical-almond and false kamani. The leaves and the bark of the tree seem to possess several flavonoids, tannins, saponins and phytosterols and is highly recommended for its nutritional value and medicinal benefits. In India and the Philippines, its leaves were used to treat hepatitis and bark for treating dysentery. *T.catappa* leaf extract has been recognized for its phytoconstituents such as Kaempferol or quercetin, punicalin or tercatin for its anticlastogenic, antiparasitic and antihepatic properties. With all these proven facts, ethanolic leaf extract of *T.catappais* yet to prove its antioxidant property with 2,2-Diphenyl-1-Picryl-Hydrazyl (DPPH) which increases leaf maturity. Thus, *T.catappa* proves to have high Pharmacognosical activity.

Keywords: *T.catappa*, Combretaceae, DPPH, Phytochemistry, Almonds.

30. In-vitro Antioxidant Activity of Methanolic Extract of *Chloroxylon swietenia* (Leaf, Stem Bark and Root)

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ABSTRACT

Chloroxylon swietenia belongs to the family Rutaceae, popularly known as East Indian Satinwood. The present study carried out to investigate the *in vitro* antioxidant activity of various parts of the study material such as leaf, stem bark and root using Methanol as a solvent system. Antioxidant activity was determined using two assays such as DPPH and ABTS assays. Various concentrations such as 25 µg, 50 µg, 75 µg and 100 µg of Methanolic extract of leaf, stem bark and root were taken. The values are expressed in terms of Mean ± SD and IC₅₀ value was also calculated for these three parts. Among the plant parts used, leaf showed maximum activity in both assays. In DPPH assay, IC₅₀ value of leaf was found as 109µg/ml and in ABTS assay, it showed 133µg/ml. Butylated Hydroxy Toulene was used as a standard positive control for DPPH and Ascorbic acid was used as a standard positive control for ABTS assay whose IC₅₀ value was calculated as 121µg/ml and 186µg/ml respectively.

Keywords: Antioxidant, *Chloroxylon swietenia*, DPPH and ABTS.

31. Anatomical Observations on Ayurvedic Plant drug *Hygrophila auriculata* (K.Schum). Heine

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ABSTRACT

The objective of the present study was to observe the anatomical features of *Hygrophila auriculata*, to study the unique characters in the family, to observe the shape, structure and arrangement of cells which will help us to find out the adulterated drugs. *Hygrophila auriculata* of Acanthaceae family was a promising medicinal plant with great economic potential. The root of the plant is used in Ayurvedic system of medicine for hepatocellular jaundice. The roots of the plant were cast into paraffin blocks and sectioned with the help of rotary microtome. Microscopic investigation of the root showed few promising anatomical features like inner cortex radially elongated with wide air chambers, laterally by thin, uniseriate or biseriate partition filaments. The vascular cylinder consists of endodermoid thin cylindrical cells, three layers of parenchymatous pericycle, parenchymatous wide pith, wide angular metaxylem elements, phloem strands are in small clusters. The present study can assist the diagnostic characters of the root of *Hygrophila auriculata* which may be taken for pharmacognostical standards for the identification of plant drug.

Keywords: *Hygrophila auriculata*, Microscopy, Ayurveda, Hepatocellular Jaundice

32. Nutritional value of *Annona squamosa* and *Annona reticulata*

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ABSTRACT

Annona squamosa is commonly known as custard apple and *Annona reticulata* known as bullock-heart. It is abundant source of dietary fibre, vitamin A, vitamin C, antioxidant, potassium, magnesium and also contains calcium. *Annona squamosa* is rich in carbohydrates, vitamin B6, copper and low fat levels, and excellent source of iron. *Annona squamosa* and *Annona reticulata* pulp have primary and secondary metabolites which can be used for medicinal and other uses. The present study was designed to evaluate the nutritional value of *Annona squamosa* and *Annona reticulata*.

Keywords: *Annona squamosa*, *Annona reticulata* pulp, Nutritional Value.

33. Phytochemical Analysis and Antibacterial Activity of *Annona squamosa* and *Annona reticulata*

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ABSTRACT

The aim of the present study is to evaluate the phytochemical content and antibacterial activity of *Annona squamosa* and *Annona reticulata*. Plants have been one of the important sources of the medicines since the beginning of human civilization. *Annona squamosa* is a small tree, branched from the family Annonaceae that bears edible fruits called custard apple. *Annona reticulata* is deciduous tree in the plant family Annonaceae. Both plants medicinally use in Ayurveda system. The fruits are generally used for edible purpose. The bark, leaves and roots of some species are used in folk medicines. Seed extract contains anticancer compounds. They are all strongly astringent and are used to treat diarrhea and dysentery. The green fruits, seed and leaves have effective vermifugal properties. The powdered seeds are an excellent vermifuge. The phytochemical studies of leaf and bark of *Annona squamosa* and *Annona reticulata* reveals the presence of alkaloids, saponins, terpenoids and phenols. The bacterial activity of the extract was comparable with the standards amoxicillin. The maximum zone of inhibition was observed in acetone when compared to aqueous, petroleum ether, ethanol and chloroform extract of *Annona squamosa*.

Keywords: *Annona squamosa*, *Annona reticulata*, Phytochemicals.

34. Biological Data Analysis Using Artificial Intelligence (AI)

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ABSTRACT

Fungi represent the second largest group of eukaryotic organisms on earth. At present a variety of methods are used for the detection of fungal spores. The culture-based methods depend on the growth of spores on an agar plate and on counting of colony-forming units. Culture-independent methods are based on the enumeration of spores under a microscope, the use of a polymerase chain reaction or on DNA hybridization for the detection of fungi. However, all these methods are limited by time-consuming procedures of sample preparation in the laboratory. In this present study *Aspergillus niger* was cultured under standard procedure. The stained images were taken and they were interpreted by using an artificial intelligence computer modeling method.

Keywords: Microscopic fungi, *Aspergillus niger*, image interpretation, artificial intelligence.

35. Phytochemical Content and Antibacterial Activity of *Syzygium cumini*

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ABSTRACT

Syzygium cumini is also known as *Syzygium jambolanum* and *Eugenia cumini*. Other common names are jambul, black plum, javaplum, Indian blackberry. It has also been very well documented in the world forum WHO report that state about 80% of world's population are dependent on plants to meet their primary health care needs. Plants metabolites have been of great interest to human for long time due to their pharmacological relevance. The entire or whole part of the plants has been widely used in the treatment of various diseases in the traditional and folk medicine. The leaves of *Syzygiumcumini* are also used in the treatment of various skin diseases. The leaves, seeds, bark, fruits, and pulp of jamun tree have some antimicrobial effect. Preliminary phytochemical screening also showed the presence of alkaloids, tannins, saponins, flavonoids, phenols, terpenoids, steroids and amino acids and absence of anthraquinone glycosides in seeds extracts of *Syzygium cumini*. The recent study was designed to investigate the phytochemical compounds and antibacterial activity of the ethanol, petroleum ether, chloroform and acetone extract of *Syzygiumcumini's* seeds, leaves and barks. The antibacterial activity was more in *Entrobact* and *Bacillus subtiles* the bark should more activity compared to the other plant parts. The plant proves to be a promising one and further studies are required, so that they can be used in the pharmaceutical properties.

Keywords: *Syzygium cumini*, Phytochemical Screening and Antibacterial Activity, Acetone.

36. Evaluation of Antioxidant Properties of R-Phycoerythrin Extract from *Spyridia filamentosa* (Wulfen) Harvey

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ABSTRACT

Natural antioxidants are found in algae are important bioactive compounds that play an important role in defense mechanism against various diseases and ageing processes through protection of cells from oxidative damage. In this study, R-Phycoerythrin (R-PE) was extracted from *Spyridia filamentosa* and was assessed for their antioxidant properties. The antioxidant property of the purified R-PE has been evaluated by measuring free radical scavenging activity by DPPH radical scavenging assay, ABTS radical scavenging activity, hydroxyl radical scavenging activity, superoxide radical (O₂) scavenging assay, nitric oxide scavenging activity and phosphomolybdenum reduction assay. The purified R-PE extract was subjected to structural analysis by UV-Visible spectroscopy, fluorescence emission spectroscopy and infrared spectroscopy. The UV-Visible spectrum showed a peak at 496 nm, 543 nm and 564 nm and fluorescence emission spectrum of R-PE was measured 575 nm which confirmed the presence of R-Phycoerythrin. The results based on IR spectral data reveals the presence of aromatic constituents containing amide group in the protein. DPPH radical scavenging assay showed the highest antioxidant potential with IC₅₀ value of 128.25 µg/ml. Nitric oxide radical scavenging activity showed an IC₅₀ value of 87.85 µg/ml, Phosphomolybdenum reduction assay showed an RC₅₀ value of 61.45 µg/ml. The hydroxyl radical scavenging activity showed the IC₅₀ value of 34.56 µg/ml and Superoxide radical (O₂) scavenging assay showed IC₅₀ value of 18.58 µg/ml. The ABTS radical scavenging activity showed the lowest antioxidant potential of 3.13 µg/ml. The free radical scavenging property of R-Phycoerythrin (R-PE) extract of *Spyridia filamentosa* demonstrate that it has high antioxidant potency and it could be considered as functional food with vital pharmaceutical and biological importance.

37. In-vitro Antioxidant and Cytotoxic Activity of Methanolic Extracts from Brown Seaweeds

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ABSTRACT

Introduction: Seaweeds are characterized the most important reservoirs of new therapeutic compounds for humans. Seaweed has been shown to have several biological activities, including anticancer activity. **Objective:** This study has been determined the antioxidant

activity of brown seaweed methanolic extract and its efficacy against on HCT116 colon cancer cell line. Methods: The brown seaweeds are *Stoechospermum marginatum* and *Padina Gymnospora* were collected and isolate the methanolic extracts were tested in the *in-vitro* antioxidant activity of three complementary assays the assays are Nitric oxide radical activity, Hydroxyl radical activity and DPPH (2,2-diphenyl-1-picryl-hydrazyl-hydrate) assays. Additionally, the cytotoxicity activities were also determined in colon cancer (HCT116) *in-vitro* model. Results: The up regulated antioxidant activity potential was detected in the methanolic extracts from *Stoechospermum marginatum* in Hydroxyl radical activity when compare to Nitric oxide radical activity and DPPH. In addition, *Padina Gymnospora* potential has been detected in DPPH free radical scavenging activity when compare to Nitric oxide radical activity and Hydroxyl radical activity. The *Stoechospermum marginatum* contains high amount of phytochemical compounds compare to *Padina Gymnospora*. Further the *Stoechospermum marginatum* and *Padina Gymnospora* showed the cytotoxic viability on HCT116. Conclusion: This study has been described the highlights of brown seaweeds potential which might be useful for antioxidant activity and act as an anticancer agent.

Keywords: Brown seaweeds, *Stoechospermum marginatum*, *Padina Gymnospora*.

38. A Study of the Phytochemical Analysis and *In-Silico* Studies of the Antidiabetic Properties of the Leaves of *Moringa Oleifera*

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ABSTRACT

Moringa oleifera has many biological activities such as, anti-inflammatory, antifungal, antibacterial, antioxidant, antimalarial and antidiabetic activities. In the present study the leaves of *Moringa oleifera* were employed for investigation of preliminary phytochemical analysis and *in-silico* docking studies. The primary investigation was to understand the antidiabetic properties of the leaves of *Moringa oleifera*. .. For phytochemical analysis powdered leaves were used in various solvent systems for isolation and detection of different phytochemicals such as alkaloids, flavonoids, tannin, saponins, quinines, cardioglycoside, terpenoids, phenols, steroids and coumarins. *In silico* modelling and docking studies using bioinformatics tools were employed to identify drugs target and identify the binding affinity. The antidiabetic inhibitors Glucokinase, Alpha amylase and PEPCK were employed and the interaction with Atropine, Emetine, Quinine, Kaempferol, Quercetine, Luteolin and Hyperoside was studied. In this study it has established that atropine had the maximum binding score (-6.22 Kcal/mol) with Glucokinase, emetine had the maximum binding score (-6.78 Kcal/mol) with Alpha amylase and Quercetine the maximum binding score (-8.48 Kcal/mol) with PEPCK.

39. GC-MS Analysis of the Marine Algae *Halymeniadilata*

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ABSTRACT

In the Present investigation, GC-MS Analysis was done on marine red seaweed *Halymenia dilata* in order to confirm its rich bioactive compounds that is economically important for potential fish feed,. The results confirmed the presence of compound like Hydroperoxide, 1-methylbutyl, Nonyl trifluoroacetate, Decane 2,2,3-trimethyl, Acetyl valeryl, Dodecyl trifluoroacetate 2-Bromo dodecane and 3 Ethoxy-1,1,1,5,5,5-hexamethyl-3 trimethyl. It was found that Hydroperoxide and Acetyl valeryl are the compounds that benefits the fishes in its growth and survival.

Keywords: Marine algae, *Halymeniadilata*, GC-MS Analysis

40. Gas Chromatography-Mass Spectroscopy Analysis of Black Plum's Seed, Bark, Leaf (*Syzygium Cumini*) Extract in Acetone Extract

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ABSTRACT

Black plum's scientific name is *Syzygium cumini*, it is commonly known as Jamun in India. This tree grows commonly in tropical and subtropical regions of the world. Black plum tree has a great economic value because most of the parts of the tree such as the fruit, leaves, bark and seeds are used as medicine to treat various diseases. For example, it is used to manage the blood sugar level in the patients suffering from Diabetes. Gas Chromatography-mass spectrometry [GC-MS] technique is one of the effective techniques. In this present study medicinal properties of Acetone extracts of various parts of jamun were analysed by GC-MS.

Keyword: *Syzygium Cumini*, GC-MS, Acetone.

41. Phytochemical Screening and Antioxidant Activity on *Syzygium Caryophyllatum* (Myrtaceae)

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ABSTRACT

The objective of the present study is to analyse quantitative and qualitative phytochemical and evaluate in-vitro antioxidant properties of various extracts of leaf, stem bark, root and seed of *syzygium caryophyllatum*. Preliminary phytochemical screening was made by standard procedure. In-vitro antioxidant properties were evaluated by assessing DPPH radical scavenging assay, Hydroxyl scavenging assay, Superoxide radical scavenging assay. The present study revealed that the leaf, stem bark, root and seed extract contains the secondary metabolites like tannin, phenols, flavonoids. *Syzygium cryophyllatum* extracts may have application in traditional system of medicine to cure various ailments.

Keywords: *Syzygium cryophyllatum*, phytochemical screening, antioxidant activity, DPPH radical scavenging.

42. Separation of Phytochemical Compounds from Ethanol Extract of Shoot of *Phyllanthus debilis*

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ABSTRACT

TLC/HPTLC analysis was done for ethanol extract of shoot of *Phyllanthus debilis*. TLC profile of the 10 μ l of ethanol extract under UV 254nm, UV 366 nm and visible light after derivatization with vanillin-sulphuric acid reagent were recorded. Under UV 254 nm 5 spots were detected indicating the presence of 5 different compounds. Under UV 366 nm 8 spots were detected indicating the presence of 8 compounds. Under visible light vanillin-sulphuric acid 7 spots were detected indicating the presence of 7 compounds. The compounds isolated at different heights are detected by their R_f values and represented in the form of spots. The HPTLC fingerprint chromatogram of the ethanol extract of the shoot of *P. debilis* was recorded at 254nm. The result showed 7 compounds of which 2 were considered to be major and other are moderately smaller peaks.

Preliminary GC-MS analysis based on retention time and molecular mass was performed to determine the nature of phytochemicals present in ethanol extract of shoot of *P. debilis*. In the GC-MS analysis of ethanolic extract of shoot of *P. debilis*, 19 phytochemical compounds were identified. The different compounds are identified with the help of NIST Mass spectral Library. The results revealed that Tumerone, Phenyl, 5-(1, 5 dimethyl-4-hexenyl)-2-methyl-, (R)- and Benzene, 1-(1,5-dimethyl-4-hexenyl)-4- methyl- were found to be the 3 major compounds in the ethanolic extract of shoot of *P. debilis*, and the remaining compounds were found in less amounts.

Keywords: TLC/HPTLC, Rf values, GC-MS analysis, NIST Mass spectral Library.

43. Phytochemical Investigation, Optical Characterisation and Antidiabetic Studies of *Cassia auriculata* (Avaram Poo)

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ABSTRACT

Pharmacologically important plant derived natural products such as flavanoids, terpenoids, alkaloids etc. have received considerable attention in the field of cytotoxicity, chemo preventive effects, treatment of metabolic disorders such as diabetes mellitus. Different systems of medicine such as Ayurveda, Siddha, Unani use the plant extract of various Indian herbs to cure diseases and imbalances. *Cassia auriculata* commonly known as Tanner's Cassia in English and in Tamil as "Avarai". *C. auriculata* (family: Cesalpiniaceae) is one among the evergreen shrubs used in the treatment of diabetes, conjunctivitis, joint and muscle pain (rheumatism), ophthalmia, jaundice, liver disease, and urinary tract disorders. A scientific approach was designed to evaluate the phyto-chemical contents, optical characterization and anti-diabetic properties of ethanolic extract of *Senna auriculata* flowers and the results are reported. GC-MS study of the extract has clearly revealed the presence of 8 compounds in the sample. FTIR and UV-Visible spectral studies have confirmed the presence of potential functional groups of the phyto-chemical constituents. Anti-diabetic studies on 3T3 Cell Line indicates that the extract of *Senna auriculata* flower can be a promising anti-diabetic medicine.

Keywords: *Senna auriculata*, *Cassia auriculata*, Avarampoo, Anti-diabetic, phytochemical, cell line, characterization.

44. Quantification of total phenolic content and evaluation of free radical scavenging potential of leaf extract of *Morinda tinctoria* Roxb.

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ABSTRACT

The present study is focused to quantify the total phenolic content and to evaluate the free radical scavenging potential of ethanolic leaf extract of *Morinda tinctoria*. The Folin-Ciocalteu method was used to estimate the total phenolic content. The free radical scavenging potential of *M.tinctoria* was evaluated by determining IC₅₀ value using DPPH free radical scavenging method. The total phenolic content was found to be 45.09 + 0.66 mg/g. *M.tinctoria* leaf extract showed 89% of scavenging activity against DPPH. The high scavenging activity may be due to the presence of phenolic content. IC₅₀ value was found to be 43.75 µg/ml. The antioxidant and free radical scavenging activity of *Morinda tinctoria* revealed that the plant can be used as a potent source of natural antioxidant.

Key words: Phenolic content, Free radical, Antioxidant, *Morinda tinctoria*.

45. Microscopic standards for Botanical identification of the Bark samples of the Conifer *Cupressus lawsoniana* A.Murray.

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ABSTRACT

Bark is a complex tissue-system comprising of outer zone of periderm or rhytidome and inner zone of secondary phloem. However botanical identification of tree in absence of flowers, fruits and seeds is much difficult. So, one has to depend upon the microscopic features of the wood/bark for Botanical diagnosis of the taxa. An attempt on the comprehensive studies on the surface features and microscopic features of bark of conifer found in the Nilgiri Hills of West Ghats of India. The conifer species taken up for the study is *Cupressus lawsoniana* A.Murray. Family = Cupressaceae. The results of the study showed that the bark of *Cupressus lawsoniana* includes, surface features and microscopic features of Secondary Phloem tissues. The bark of innermost part showed cedar as brown with flat ridges and furrows. It includes noncollapsed phloem. Tannin occurs in most of the parenchyma cells which are about 30µm in diameter. Calcium oxalate crystals are seen in the collapsed phloem. These characters clearly distinguish the conifer from other plants.

Keys words - *Cupressus lawsoniana* ; Tannin ; Calcium oxalate Crystals.

46. Plastic Degradation Using Seaweeds Amended In Natural And Artificial Seawater Media

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ABSTRACT

The Present study was focused on the plastic degradation efficiency of brown seaweed *Stoechospermum marginatum* amended in natural and artificial seawater media. The effect of micr- plastic on the morphology and anatomy along with biochemical study were done in in-vitro. Total carbohydrate and lipids increased with increased in days when amended with micro-plastics. While protein showed an initial increase alone. Thus micro-plastics are lethal to seaweeds which should be reduced to a maximum to save the ecosystem.

Key words: *Stoechospermum marginatum*, Micro–plastic, artificial NaCl medium, Biochemical.

47. Phytochemical screening and antioxidant activity of leaf extracts of *Morinda tinctoria* Roxb.

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ABSTRACT

Medicinal plants constitute a source of raw materials for most of the drugs which play an important role in the field of health care. In the present study, the phytochemical analysis of *M.tinctoria* leaf extract showed the presence of tannins, saponins, flavonoids, alkaloids, quinones, glycosides, cardio glycosides, phenols, coumarins and anthocyanins in ethanol solvent whereas in aqueous extract except coumarins, quinones and anthocyanins all the other compounds were present. The antioxidant activity was assessed by DPPH free radical scavenging method. The results showed that the activity was increased with increasing concentration of the leaf extracts. 89% of scavenging activity was observed in *M.tinctoria* leaf. The lowest IC50 value with highest antioxidant activity was found. The high radical scavenging activity may be due to the presence of phenol content in the leaf extracts of *M.tinctoria*.

PAPER PRESENTATION -III

48. Identification of Molecular Target Using Exome Sequence Analysis and Potential Phytochemical Using Virtual Screening to Inhibit S100z - an *In-Silico* Analysis

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ABSTRACT

Breast cancer is the most common malignancy affecting women, and in 2018, 6, 27,000 deaths from breast cancer were confirmed by the World Health Organization. Understanding the molecular biology of breast cancer leads to better identification of potential inhibitory small molecules. Phytochemicals have demonstrated efficient inhibition of angiogenesis and metastasis in breast cancer cells. Exome sequence analysis has proven efficient identification of disease-causing mutations. In this study, variants from the exome sequence data of nine matched metastatic and primary breast cancer samples were searched using GATK-pipeline. Analysis resulted in the identification of variants in TOGARAM2, C3orf18, S100Z, MYH15, EPB41L4A, LARP1B, NAALADL2, OR2W3 and OR2AK2 in all nine primary and metastatic samples, not reported association with any disease. Influence of these variants in structure was studied using protein modelling and dynamics studies. S100Z p.E23A was focused based on the previously reported association of S100Z expression with breast cancer metastasis. Castp suggested binding site includes the glutamic acid at position 23. Druggable phytochemicals library was created from IMPPAT database based on Lipinski RO5 zero violation, Oral PhysChem score '0', QEDw (0.75 and 1) and Blood Brain Barrier (BBB) penetration. Virtual screening of the short-listed phytochemicals helped to identify the most potential molecule to inhibit S100Z.

49. *Chlorococcumhumicola* - A powerful Source of Carotenoids to Target Against Benzo (a) pyrene Induced Lung Cancer by LC-MS, NMR and Molecular Docking Studies

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ABSTRACT

The fresh water green algae *Chlorococcumhumicola* (*C. humicola*), rich in bioactive components such as carotenoids, flavonoids, polyphenols and fatty acids, has a wide variety of health benefits used in the medical and food industry because of its possible role in the prevention of cancer. Human cytochromes present in lungs, plays an important role in the metabolic activation of chemicalcarcinogens, and in particular, is thought to be linked to lung cancer. The present study focused on to elucidate the structural details of the existed carotenoids from the green algae *C. humicola*. The total carotenoid extract quantified and further fractionated in an open column chromatography (OCC) yields totally six major carotenoids. These fractions were confirmed by HPLC before subjecting to LC-MS-APCI and NMR analysis for their structural elucidation. The spectral data of these fractions revealed the six major fractions were violaxanthin, astaxanthin, lutein, zeaxanthin, α carotene and β carotene. All these compounds effectively metabolized to Retinoic acid (RA). In order to understand the molecular mechanism of anticancer activity in related with cytochrome P450 (CYP) function, ahomology model of this enzyme has been constructed with its isoforms CYP 1A1, CYP 1A2, and CYP 1B1.CYP substrates, such as benzo[a]pyrene [B(a)P], benzo[a]pyrene 7,8 dihydrodiol [B(a)P diol] and RA were docked into the active site of the model, binding interactions and key amino acid residues able tointeract with the substrate, have been identified. The analysis of enzyme-substrate interactions indicated that Vander walls, hydrogen and hydrophobic interactions are mainly responsible for binding of these substrates in the active site. CYP 1A1 and 1A2 shows the binding similarities comparing with CYP1B1. Key residues Ala and Gly in the position 317 and 318 play an important role both in procarcinogen activation and RA binding. Additionally, the binding free energy calculations were performed for the three substrates. Lower binding energy required for RA binding than procarcinogen activation. The obtained values were similar to those observed experimentally, which confirms the bioactive compound can effectively interacted through the binding site of carcinogen and exhibit their anticarcinogenic activity.

Keywords: *Chlorococcum humicola*, Carotenoids, Retinoic Acid, benzo(a)pyrene, benzo(a) pyrene 7,8 dihydrodiol, cytochrome P450 1A1,cytochrome P450 1A2, cytochrome P450 1B1.

50. Docking Studies on the Phytochemicals Isolated from *Aegle marmelos* against Methicillin Resistant *Staphylococcus aureus* (MRSA)

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ABSTRACT

The objective of the present study is to do phytochemical profiling of valuable medicinal plant, *Aegle marmelos* with identification of active phytoconstituents combined with *in-silico* molecular docking studies. The alarming trend of emergence of drug resistance by bacteria especially Methicillin resistant *Staphylococcus aureus* (MRSA) prompted exploration for novel compounds as therapeutic leads. Medicinal plants being rich source of phytochemicals serve as potential antibacterial agents. Molecular docking is a convenient, valuable and cost effective modelling tool in modern drug discovery. *In silico* docking studies for active plant components with target enzyme, arsenate reductase was performed by automated docking software, Autodock Vina. The binding energy of the phytochemical molecules with the target protein enzyme was calculated. Lower energy score shows stronger affinity for the target. The phytochemical compounds alpha monostearin, beta sitosterol and pyrrolidino piperazine 3, 6 dione showed stronger binding affinity with the target enzyme compared to the natural substrate. So, the present study suggests that active molecules from *Aegle marmelos* could be used as potential leads for further improvement and design of novel drugs against infectious bacterial pathogen MRSA.

Keywords: Aegle Marmelos, MRSA, Docking.

51. Enhanced Solar UVB (280-320 nm) Radiation as a Provoker of Secondary Metabolites Synthesis in *Acalypha indica* L.

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ABSTRACT

UV-B is a growing risk due to an increase in the surface of the earth as a result of the depletion of stratospheric ozone. The effects of atmospheric UV-B radiation are generally negative for biological life. In addition, enhanced levels of UV-B radiation can negatively alter plant physiological processes, growth and productivity. Nonetheless, when studying the effects of UV-B on medicinal plants such as *Acalypha indica* in tropical regions under field conditions, several curious phenomena have been discovered. Enhanced UV-B radiation has significantly boosted growth in *A. indica*. The results of the

photosynthetic pigment analysis showed that enhanced UV-B synthesis of Chl could be due to the improvement of biosynthesis or the accumulation pigments by their precursors. The concentration of UV-B absorbing pigments such as flavonoids and anthocyanins has been increased by UV-B radiation. The response of field-grown plants increased UV-B levels increased the accumulation of bioactive compounds such as phenolics, alkaloids saponin and phytosterol, UV-B radiation from *A. indica* compared to the control. From these investigations, as we recorded, enhanced UV-B on medicinal plants, there was a positive induction of growth showed growth physiology and bioactive secondary metabolite synthesis in *A. indica*. This enhanced UV-B may be interesting to follow in the study of the phytotherapeutic activity of *A. indica*, its health aspects of human life as well as the positive response of UV-B to enhance the nutritional value of plants by inducing a possible improvement in various health promoting components.

52. *In-silico* Molecular Docking Study of the Molecule Methyl 3 β -hydroxyl- bisnorellocholanoate from Coconut Shell Oil on Epidermal Growth Factor Receptor

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ABSTRACT

Emergence of modern anticancer therapy claiming absolute necessity of using isolated or synthesized chemical compounds for efficient patient treatment purely based on natural sources. The role played by the over expression of Epidermal Growth Factor Receptor (EGFR). The present research aimed to synthesis Methyl 3 β – hydroxyl – bisnorellocholanoate for breast cancer activity. Molecular docking was predicted using Autodock and Autodock Vina in the PyRx platform on EGFR. The molecule, Methyl 3 β -hydroxyl- bisnorellocholanoate obtained from Coconut shell oil has potential binding with the target molecule. The computational analysis revealed that the molecule found as a good therapeutic agent to the breast cancer with good binding affinity of -4.95 kcal/mol. for EGFR.

Keywords: Coconut shell oil, breast cancer, molecular docking, Methyl 3 β - hydroxyl- bisnorellocholanoate

53. Chlorophyll and Morphological Mutants of Little Millet (*Panicum sumatrense* Roth ex Roemers&Schultes.) variety Co (Samai)4.

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ABSTRACT

The present study was observed in Chlorophyll and morphological mutants play on important role to assess the Concentration of mutagens. *Panicum sumastrense*. Variety Co(samai)4 seeds were treated with EMS (Ethyl Methane sulphonate) in the dosage of, 25mM, 30mM and 35mM, in the present investigation in M₂ generation 3 chlorophyll mutants and 8 morphological mutants was found. The observed Chlorophyll mutants are Albino, Xantho, Viridis and the Morphological mutants are tall, tillers, Bushy, dwarf, early maturity plants, late maturity plants, long panicle and small panicle. EMS provided more number of chlorophyll mutants and morphological mutants.

Keywords: Chlorophyll mutants, Morphological mutants, EMS.

54. Focus on Inhibition of Diabetes in *Dryopteris cochleata* by A-amylase and α -glucosidase Enzymes

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ABSTRACT

Dryopteris cochleata is an important medicinal pteridophyte found to be distributed in both cold and warm temperate regions. In India, it occurs in hill slopes near the falls exposed to sunny areas etc., and was locally named as Jatashankari. It has diversified medicinal uses such as blood purifier, to relieve muscular and rheumatic pains, to cure diabetic disorder, epilepsy and also for snake bite. The present study gives an idea on inhibition of diabetes in this valuable pteridophyte with the help of two inhibiting enzymes such as α -amylase and α -glycosidase. Various concentrations such as 20 μ g, 40 μ g, 60 μ g, 80 μ g and 100 μ g of methanolic leaf extract of *Dryopteris cochleata* were assessed. The values are expressed in terms of Mean \pm SD. In both inhibitory activities, highest concentration of 100 μ g showed maximum percentage of inhibition such as 44.93 ± 0.008 and 57.85 ± 0.009 respectively. Acarbose was used as a standard positive control for both the activities.

Keywords: Jatashankari, Diabetic Disorder, α - amylase and α - glycosidase.

55. Physical Mutagenic Studies on Little Millet (*Panicum sumatrense* roth..) In m₁ Generation

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ABSTRACT

The present study was carried out the mutation breeding is a one of old and conventional method and techniques. This work was find out the effect of physical mutagens were gamma rays on *Panicum sumantrense* in M₁ generation. The plant seeds of samai, Co (samai)4 variety treated with different dose of Gamma rays selection studies were conducted to improve the yield and to gene safe genetic variability in different quantitative traits such as days to first bloom, Plant height, Number of Leaves, Number of nods, Length and Breadth of Panicle, 1000 seed weight and yield per single plant the result was find out the all the parameters were increased with decreased by Gamma rays, Those days to first bloom was increasing doses. According to the very each parameter were studied shows a negative direction towards crop improved in M₁ generation because of the stress caused by mutagenic treatment.

Keywords: Gamma Rays, Little Millet, Yield.

56. Phytoconstituent Analysis and Inhibitory Potentials of *Stevia Rebaudiana* (Bertoni) Leaf Extracts against Bacterial Pathogens

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ABSTRACT

Stevia rebaudiana (Bertoni) is considered as an economically important plant, belonging to *Asteraceae* family. The leaves have been noted to possess a high concentration level of sweet tasting secondary metabolites such as Steviosides and Rebaudiosides. It not only contains sweetness but also maintains the normal blood sugar level and hence it is also being used in homemade recipes and industries for diabetics. In the current study, the leaves of *Stevia rebaudiana*, a natural alternative to artificial sweetener, reported to contain various phytochemicals, were extracted using Hexane, Ethyl acetate and Ethanol solvents and analyzed for the phytoconstituents present. The phytochemical analysis showed the presence of carbohydrates, tannins, saponins, flavanoids, phenols, cardiac glycosides etc. Quantitative estimation of the phytochemicals was also performed. The anti-bacterial activity of the plant extracts was examined against

selected micro-organisms including *Bacillus*, *Staphylococcus aureus*, *Klebsiella pneumonia* and *E.coli* using Well diffusion method. The extracts were noted to inhibit *Klebsiella pneumonia* and *E.coli*. This study clearly validated the use of Stevia metabolites as natural sweetener, with an additional anti-bacterial property.

57. Antimetastatic Activity of Isolated Phytochemicals from *Vitex Negundo* through Liposome Mediated Nano Carriers in Mammary

Carcinoma

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ABSTRACT

Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. There is a constant demand for new therapies to treat and prevent this life-threatening disease. At present scientific and research community is drawing its attention towards naturally derived compounds as they have less toxic side effects compared to existing treatments such as chemotherapy. The emerging technologies of interest in this field includes nano particles / nano-medicines which aim to enhance anticancer activities of plant derived drugs by controlling the release of the compound and investigating new methods for administration. The present review discusses the demand for naturally derived compounds from *Vitex negundo* and their properties which make them targets for potential anticancer treatments. Compounds (Vitexin, Negundin, Negundoside, Agnuside), isolated and purified from the selected medicinal plant was further used for the preparation of nano drugs, using liposome as a drug carrier. Liposomes prepared were characterized with biocompatibility, biodegradability and toxicity testing. The anti metastatic activity of the bioactive compounds using MCF 7 mammary cell lines was treated with liposome loaded nano drugs and the effect of the drugs was tested by the cell viability assay, MTT cell proliferation assay and cell apoptotic activity. The biochemical changes and morphological changes were evaluated during Epithelial- Mesenchymal Transition (EMT) in mammary Carcinoma to know the potentials of drugs. The results of the present study conclude that the isolated phytochemicals of *Vitex negundo* possess the anti metastatic activity and the further studies will confirm the effectiveness in the treatment of cancer.

Keywords: Metastasis, anti-metastatic activity, vitexin, negundin, EMT (Epithelial- Mesenchymal Transition), E-Cadherin.

58. Molecular docking Analysis of Methanolic Flower Extracts of *Bauhinia purpurea* Linn. and *Bauhinia tomentosa* L.

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ABSTRACT

Medicinal plants restrain a variety of secondary metabolites that are mainly involved in the treatment various diseases. This present investigation deals with the Molecular docking analysis of flower extract of *Bauhinia purpurea* Linn. and *Bauhinia tomentosa* L. Methanol flower extracts of both the plant samples were subjected to GC-MS analysis for revealing its chemical components. These plant flower extracts are rich with anti cancer properties. Those anti cancerous chemical components were analyzed by molecular docking for the identification of suitable model for the future drug designing and development processes. HER 2 is considered as an important target for the development of anti-cancer drugs. At the present time, docking technique is developed to envisage the tentative binding strictures of ligand-receptor complex in advance. The most important intent of molecular docking is to achieve ligand-receptor complex with optimized conformation and with the target of having a lesser amount of binding free energy.

Keywords: Molecular Docking, Anti cancer, HER 2, *Bauhinia purpurea*, *Bauhinia tomentosa*

59. A Preliminary Study on the Morphology, Anatomy, Proximate, Mineral Analysis and Chlorophyll Estimation on Selected Grasses

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ABSTRACT

Grasses serve as the primary food source for most of the herbivores but generally grasses are considered as weeds of open fields hence this study aim in investigating the nutritional value of selected three species of grasses by studying their morphological, anatomical, histo- chemical, nutraceutical values including some mineral analysis and chlorophyll estimation. The selected three species of grasses are *Bothriochloa pertusa* (L.) A. Camus, *Chloris barbata* Sw. and *Stenotaphrum dimidiatum* (L.) Brongn. The study shows that all the grasses posses' nutritive benefits and can be used as feed for cattle and other livestock. Based on the results *Bothriochloa pertusa* (L.) A. Camus is considered to have high fodder value.

Keywords: Histochemical, Mineral Analysis, *Bothriochloa pertusa*, *Chloris barbata* and *Stenotaphrum dimidiatum*,

60. Herbal Pharmakon Isolated from *Vitex negundo* Attenuates Rheumatoid Arthritis

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ABSTRACT

Rheumatoid arthritis (RA) is an inflammatory, autoimmune disorder mainly affecting synovial joints. Disease-modifying anti-rheumatic drugs (DMARDs) generally used to treat rheumatoid arthritis quite expensive, exhibits resistance and having side effects. *Vitex negundo* is commonly called nochi is traditionally used in the treatment of various inflammatory diseases. The present study involves qualitative and quantitative screening and isolation of pharmacologically beneficiary compounds from *V. negundo* against RA. The biologically active pharmakon selected purified and characterized from *V. negundo* is vitexin. *In-vitro* anti-inflammatory activity of vitexin was determined by HRBC membrane stabilization, BSA protein denaturation assays and Free radical scavenging ability of vitexin was also evaluated. RA induced human monocyte cell lines -THP 1 (*in vitro*) were screened for TNF, IL levels and expression of collagenase before and after administration of herbo-drug. The decrease in the level of TNF and IL were compared with positive control. This serves as an evident that the pharmakon is biocompatible for *in vivo* studies and *in-silico* studies. The suppression of immunological parameters *in vivo* shows that the pharmakon is antiarthritic. *In-silico* studies targets prediction of vitexin-TNF receptor binding through JAK pathway to suppress the expression of collagenase (MMP-13). The results conclude the collagenase - collagen binding hindered, by vitexin suggests as a potent therapeutic formula against RA.

Keywords: Rheumatoid Arthritis, *Vitex negundo*, Vitexin, Collagenase, Tumour Necrosis Factor, Interleukins.

61. Quorum Sensing Inhibitory Potentials of *Withania Somnifera* (Ashwagandha) Leaf Extracts Against *Chromobacterium violaceum* Biofilms

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ABSTRACT

Withania somnifera is one of the most powerful medicative plant that has been in the Indian Ayurvedic system. It belongs to *Solanaceae* family. *W. somnifera* is known to reduce anxiety, and stress, help fight depression, boost fertility and even boost brain function. Biofilms are a collective of one or more forms of microorganisms that may grow

on many alternative surfaces. Microorganisms that form biofilms include bacteria, fungi, and protists. *C. violaceum* is a gram-negative beta-proteobacterium forming smooth colonies on common laboratory media. The violet color comes from the pigment violacin, in this bacterium. This bacterium has been widely used as a model organism in QS research labs (Vijay Kothari et. al., 2017). Bacterial biofilm activity is regulated by quorum sensing (QS). Therefore, blocking bacterial QS system may prevent QS controlled phenotypes responsible for biofilm formation. In this present study, the leaves of *W. somnifera* were collected from Salem district. The leaves were shade dried and powdered and sequentially extracted with Hexane, Ethyl acetate and Ethanol solvents. Qualitative and Quantitative Phytochemical analysis was performed for the three extracts. The phytochemical analysis showed the presence of carbohydrates, tannins, saponins, flavanoids, alkaloids, quinones, phenols etc., Quantitative estimation of the phytochemicals was also evaluated. Crystal violet assay was used to evaluate the inhibitory potential of the three extracts from *W. somnifera* against *C. violaceum*.

Keywords: Extraction, Phytochemical analysis, Anti-biofilm, Crystal Violet Assay.

PAPER PRESENTATION -IV

62. Phytoremediation of Heavy Metals Using Commercial Varieties of *Melia dubia* Cav - A multipurpose Tree Crop for Sustainable Utilization in Waste Land Management

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ABSTRACT

Increased industrialization and urbanization due to which excessive deposition of toxic heavy metals in the environment has been reported. Accumulation of heavy metals and metalloids through the emissions from industrial areas, mine tailings, land application of fertilizers, pesticides, coal combustion residues and spillage of petrochemicals etc., has rapidly resulted in contamination of soil. Cleaning up the contaminated soil for revegetation is the need of the hour in order to minimize their impact on the ecosystem as well by developing an agro forestry/ social forestry model using commercially and industrially important tree species. In the present research work, commercial varieties of *Melia dubia* Cav seeds (FRI/MD/232-Varsha and FRI/MD/349-Shashi) were procured from Forest Research Institute, Dehradun. The seeds were used for germination studies and the seedlings were used to check the efficacy for phytoremediating the heavy metals cadmium and chromium at different concentrations using pot culture experiment. From the results it was observed that both the varieties were well adapted, tolerant and efficiently remediated the heavy metals from the soil WHEN COMPARED WITH THE CONTROL.

Phytoremediation studies revealed a significant variation ($P < 0.05$) in shoot length and girth, biomass, pigment contents. Primary metabolites, proline, and enzymes such as catalase and peroxidase were found to be increased in the plants grown in heavy metal treated soil over the control. It was also observed from the study that both the varieties of *Melia dubiaca* effectively absorb heavy metal cadmium and chromium. In concentration factor, Tolerance index and Remediation factor was found to be more than 1 except tolerance factor which was less than 1 indicating bioaccumulation of heavy metals in root system and reduced translocation from root to shoot system. Hence, the establishment of this money spinning tree species which is a source of pulp, biomass and plywood can be recommended for extensive plantation to improve soil fertility in heavy metal polluted soil by phytoremediating the soil as well as a suitable agroforestry/social forestry tree crop for wasteland management. This would certainly be a measure towards increasing the forest productivity.

Keywords: Heavy Metals, Phytoremediation, *Meliadubia*, Biosorption Forest Productivity.

63. Banana Spathe Based Compost and Its Effect as a Substrate on the Growth of Rice Plants

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ABSTRACT

The application of agrowaste in the form of compost is an alternative eco-friendly strategy for overcoming the issues that arise due to the over usage of fertilizers in the production of staple food crops. Herein, banana spathe obtained as an agrowaste from five different popular varieties of banana was used as a substrate to prepare organic compost for improving the growth and yield in a rice cultivar Co51 widely grown in the state of Tamil Nadu, India. The banana spathe was applied both as an aqueous extract as well as compost to evaluate the growth parameters in bioassays and pot culture experiments. The compost improved the growth parameters like root length, shoot length, biomass, tillers, length and width of flag leaf and yield in Co 51 rice plants significantly up to $P < 0.001$ when compared to the untreated control plants and fertilizer treated rice plants. Among the five varieties of banana (Karpuravalli (MV1), Poovan (MV2), Plantain (MV3), Elaki (MV4) and Rasthali (MV5) selected for the study the yield was maximum in Rasthali spathe extract treated rice plants. Biochemical analysis of the compost treated rice plants showed increase in chlorophyll, carotenoid, carbohydrate, protein and amino acid content than the untreated control plants. The phytochemical analysis of the liquid extract and compost from banana spathe revealed the presence of phenols, tannins and terpenoids, the

presence of which can improve the shelf life of the organic compost. Further, the extracts possessed antimicrobial activity against tested bacterial strains. These results suggest that the banana spathe compost (BSC) could be used as a suitable substrate for the growth of rice plants thus providing a strategy to reduce the use of fertilizers and protect the agroecosystem.

Keywords: Agrowaste, Banana spathe compost (BSC), Karpuravalli (MV1), Poovan (MV2), Plantain (MV3), Elaki (MV4) and Rasthali (MV5)

64. Vermicomposting of Tamarind Shells and Egg Shells

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ABSTRACT

Vermicomposting is favoured in both agricultural and solid waste management sector. When compared with conventional composting; it provides a way to treat organic wastes more quickly. The vermicompost is more favourable than the compost manure, since it increases the water holding capacity and contains water-soluble nutrients. The earthworm species most often used are red wigglers *Eisenia fetida*, though European night crawlers *Eudrilluseugeniae* could also be used. Red wigglers are recommended by most vermicomposting experts, as they have some of the best appetites and breed very quickly. The fraction of soil which has gone through the digestive tract of earthworms is called the drilosphere. In the present study two different earthworm species namely *Eudrillus eugeniae* and *Eisenia fetida* were selected based on their general character. Pollutants namely Textile dye sludge and coir pith were used as substrate for vermicomposting. The pH of the final vermicompost was acidic in both the treatment samples. Higher moisture content of vermicompost was produced by *Eisenia fetida* when compared to *Eudrillus eugeniae*. Total (N) was significantly higher in the cast inoculated with *Eisenia fetida*. After treatment, all samples showed higher concentrations of total phosphorus than the initial value. The difference between control and experimental value was statistically significant. Total Potassium, Total Calcium and Total Magnesium have increased and provide greater bioavailability in the soil. Overall comparisons after treatment suggest that the inoculation of *E. fetida* showed good results than the *E. eugeniae* in the physico chemical parameter improvement. The micronutrients content was rich in *E. fetida* vermicompost compared to the *E. eugeniae*. Textile dye sludge was found to have deleterious effect on both the earthworm species when compared to the other substrate used for vermicomposting. Vermicomposting proves to be a promising method to remediate soil contaminated with textile dye sludge.

Keywords: Tamarind Shells, Egg Shells, *Eudrilluseugeniae*, *Eisenia fetida*

65. Vermicomposting of Arecanut Leaves.

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ABSTRACT

Vermicompost is a nutrient-rich organic fertilizer and soil conditioner in a form that is relatively easy for plants to absorb. Worm castings are considered as richest organic fertilizer, because the earthworms grind and uniformly mix minerals in simple forms, plants need only minimal effort to absorb them. The worms' digestive systems create environments that allow certain species of microbes to thrive to help create a living soil environment for plants. Arecanut plates are used in large quantities and they have to be degraded efficiently. In the present study two different earthworm species namely *Eudrilluseugeniae* and *Eisenia fetida* were selected based on their general character. The worms were used to compost arecanut plates. The composting time, character of the compost were studied. The study proves that the arecanut plates could be degraded faster when compost using earthworms rather than the normal compost method.

66. Organic Farming for Sustainable Agriculture

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ABSTRACT

Organic farming originated as soon as man started to cultivate crops. Shifting agriculture was no more interesting and started to have permanent settlements. To enhance crop growth he started enriching the soil with farmyard waste and animal refuse. For centuries together cattle and man has been living in harmony and organic farming maintained the stability of the soil. For the past few decades inorganic fertilizers took the place of the organic fertilizer and it lead to many environmental imbalance. Once again the importance of organic fertilizer is realized and promoted by various organizations and individuals. Organic farming continues to be developed by various organizations today. It is defined by the use of fertilizers of organic origin such as compost manure, green manure and bone meal and places emphasis on techniques such as crop rotation, mixed planting and biological pest control. Organic standards are designed to allow the use of naturally occurring substances while prohibiting or strictly limiting synthetic substances.

67. Household Remedy for Mosquito Menace

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ABSTRACT

Mosquitoes are one of the most medically significant vectors that transmit parasites and pathogens, which continue to have devastating impact on human beings. Any number of prevention measures are not effective in controlling the menace that is mosquito. The most common ingredients in most mosquito repellents are lemon, marigolds, basil, lavender, peppermint, garlic and so on. Indoor plants like pothos and aromatic plants like coleus are effective mosquito repellents. Though growing the plants can repel mosquitos, however, burning or boiling the herbs may help **repel mosquitoes** from an area. Many herbs naturally repel mosquitoes and grow these herbs in and around your house. Use Essential Oils, Citronella Candles could be burnt toward off mosquitoes.

68. Vermicompost: A Potential Organic Fertilizer for Sustainable Vegetable Production

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ABSTRACT

The chemical inputs like fertilizers and pesticides etc. in agriculture gives positive effect on crop production, but it leads to soil deterioration and poor quality of food in addition to increase of cost of production. Ultimately, the continuous use of chemical inputs is not only affecting the soil fertility and food quality but also causes land, water and air pollution. Among the food crops, vegetables are considered as an important commodity to balance the nutrients needs for common people. But there was an indiscriminate use of chemical inputs in vegetable cultivation compared to cereal crops which leads to accumulation of chemical residues thereby affecting people's health. To avoid or mitigate these bad effects, the judicious use of organic fertilizers, biofertilizers and biopesticides are recommended in crop cultivation. In this context, an investigation was carried out to produce vermicompost from leaf litter using earthworms and to study its effect on growth and yield of bhendi under pot experiment. The experiment was carried out at Botanical Garden of Department of Botany, H.H. Rajah's College, Pudukkottai, Tamilnadu, India. The growth parameters like plant height, number of leaves, leaf chlorophyll content were observed periodically and the yield parameters such as number of fruits, fruit size and fruit weight were recorded at the time of harvest. In all the observed parameters, vermicompost application showed maximum results compared to 100% recommended dose of chemical fertilizers (RDF). But among the treatments, the combined application of vermicompost and 50% RDF of chemical fertilizers showed better effect on growth and yield of bhendi. The results of present investigation suggest that vermicompost have better beneficial effect either alone or combined with chemical fertilizers on vegetable production and it may be the future trends for sustainable vegetable production.

69. Biosorption of Heavy Metals by Agro-waste from Tannery Effluent

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ABSTRACT

The toxic substances found in industrial effluents are mostly of heavy metals, whose toxicity to both man and the environment has been on found to increase. The ability of agricultural solid waste such as sugar cane bagasse, coconut coir, corn cob, coir pith along with peanut cake were used in the treatment of tannery effluent. The spent mushroom substrate of *Calocybe indica* was also used to treat tannery effluent. The biosorption efficiency of all biomass was studied. These biosorbents has been found to serve as an alternative material to the conventional methods of effluent treatment. The biosorption percentage and uptake of heavy metals were estimated by Atomic Absorption Spectrophotometer. In this present study, the result shows the adsorption efficiency of heavy metal was maximum in corn cob when compared with other treated biomass.

Keywords: Bioremediation, Agro-waste, Atomic Absorption Spectrophotometer, Corn Cob, Biosorption Percentage.

70. Heavy Metal Accumulation from Tannery Effluent by *Eichhornia* spp.,

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ABSTRACT

In the present study, heavy metals uptaking ability of *Eichhornia* spp., from tannery effluent was studied for 28 days. After 28 days of treatment, the effluent was analyzed to Atomic Absorption Spectrophotometry to study the biosorption of the heavy metals by the plant separately for root and shoot. Treated effluent was also analysed for heavy metals. Translocation factor was calculated for the treated plant. The toxicity of treated effluent was studied by germinating green gram seeds and the root and shoot length was measured and seedling vigour index was calculated. Uptake of heavy metals was high in roots of plants and reduced in the treated effluent as observed from Atomic Absorption Spectrophotometer analysis and translocation factor.

Keywords: *Eichhornia* spp., atomic absorption spectrophotometer, translocation factor, seedling vigour index.

71. Phycoremediation of Dairy Effluent Using Cyanobacteria

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ABSTRACT

Phycoremediation of metals by cyanobacteria has been identified as a potential option to the existing technologies for the removal of metal pollutants from industrial or urban wastewater. The use of cyanobacteria for the treatment of dairy effluent has been shown to be extremely competent in absorption of nutrients and as accumulators and degraders of various types of environmental contaminants, like xenobiotic compounds. The removal efficiency of the various contaminants was assessed and compared. The findings demonstrated the high efficiency of the organisms under investigation for the removal of the target pollutants that were species-dependent and contaminant-dependent. Metals are known to accumulate by means of metabolic dependent uptake mechanisms or by adsorption on cell wall surfaces and outer envelopes. The current examination also shows that cyanobacterium *Stigonematurfaceum* is a phycoremediation agent that reduces the amount of metals that cause pollution. The results indicate the ability of natural resources as powerful pollution control agents.

Keywords: Phycoremediation, dairy effluent, *stigonematurfaceum*.

72. Effect of Panchakavya on the Fertility of Soil

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ABSTRACT

Sustainable Agriculture means healthy environment, soil health, minimize water use, and lower pollution level in the agriculture land. The organic soils become richer and deeper thus promoting healthy plant growth. The water holding capacity of soil term to farms a optimize crop production. Soil organic matter is another factor that can help to increase the water holding capacity. Organic matter has a natural magnetism of water farm to increases the percentage of soil organic matter and water holding capacity of soil. The soil organic matter can be increased by adding plant or animal waste materials. According to ayurveda cow products are used to treat various crops to increase and retain the soil fertility. Five products of cow called as panchakavya is an important component of many rituals and pooja in Hindus. Many useful elements have been found in panchakavya like urea, uric acid and minerals, bioactive substances and hormones like urokinase, epithelium growth factor, colony stimulating factor, growth hormone, erythro protein gonadotropins, kallikrin, trypsin inhibitor, Allantoin, etc. The present study focused on soil analysis in panchakavya with water holding capacity of soil, macronutrients and micronutrients four

crops namely ragi, green gram, paddy and roselle. The panchakavya treated soils compared with control and chemical treated soil. The result present study clearly shows the yield of panchakavya treated soils increased nearly 5 times that of the control and chemical.

Keywords: Panchakavya, Adjuvants, Physico-chemical Properties of Soil, Macronutrients and Micronutrients.

73. The Effect of Panchakavya and the Yield of Ragi Crop

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ABSTRACT

The organic fertilizers are sustainable, renewable bio degradable and environmental friendly. The qualities of the crops grown with organic fertilizers are far superior to the ones grown with chemical fertilizers. Agro economics plays the role in the development, for a continuous level of farm surplus and is one of the advances of technology and commercial growth. Panchakavya is combination of cow's urine, milk, ghee, curd and dung. It is an alternative for chemical fertilizers and pesticides. Panchakavya acts as a growth promoter. The effect of panchakavya on the plant growth yield and soil fertility was studied in crop namely ragi . In the present study the effect of panchakavya on growth and yield of the ragi crop were studied. Panchakavya was more effective and the preparation was easy and very economical. It proves to be a good fertilizer; in addition it retains the soil fertility and agro economic marketing profit level also increased.

Keywords: Panchakavya, Ragi, Growth & Yield, Soil Fertility and Profitability.

74. Phytochemical Screening Of Brown Sea Weeds Used In Degradation Of Plastics Ameded In The Natural And Artificial Sea Water Media

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ABSTRACT

In marine environments there have been dumping of plastics which degrade the environment. In the present study, plastic degradation efficiency of seaweed was evaluated. The algal extracts were dissolved in acetone which thus obtained were qualitatively tested for the presence of various phytochemical constituents. In aqueous amended in Natural sea water medium only saponin were present. While in acetone extract natural see water

medium flavonoids, steroids, terpenoids, quinones, carbohydrates, protein, fixed oils and fats, were present. Artificial seawater plastic amended aqueous extract of *S. marginatum* showed saponins, cardio glycoside, tannins is present. while in Acetone extract showed their microplastics steroids, phenolic compounds, terpenoids, cardio glycosides, flavonoids, and tannins. Many secondary metabolites showed their presence with microplastics amended medium. Due to micro plastics. This showed the stressed condition of seaweeds.

Key words: *Stoechospermum marginatum*, Phytochemical, Artificial Nacl medium, Acetone, Secondary metabolites.

75. Herbicidal activity of sesquiterpene lactones from Compositae: A Review

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ABSTRACT

Sesquiterpene lactones (STLs) constitute a large group of secondary metabolites that are widely distributed in several angiosperm families. STLs are characteristic constituents of *Compositae/Asteraceae* members. In addition to their pharmacological importance and potential therapeutic applications, most STLs display a wide range of activities in plants; one among them is herbicidal activity or inhibiting growth of competing plants. Parthenin from *Parthenium hysterophorus* showed inhibition in seedling growth of two weeds viz., *Amaranthus viridis* and *Chenopodium murale*. Inhibitory effects of two sesquiterpene lactones, Costunolide, Parthenolide and a parthenolide derivative – 1,10 – exoparthenolide isolated from dichloromethane extract of stem bark of Southern magnolia strongly inhibited the growth of wild oat (*Avena fatua*). The effect of 17 guaianolides showed deeper effects on the growth of either monocots or dicots. Pseudoguaianolides belongs to the class of STLs derived from *Asteraceae* showed herbicidal activity on wild oat. Lumisantonin inhibited the growth of shoots and roots of two monocotyledons and three dicotyledons. Heliangolides compounds could inhibit the development of invasive weeds such barnyardgrass and brachiaria. Glaucolide B isolated from *Vernonia fruticulosa* had a greater inhibitory effect on root length of monocotyledon species. Artemisinin was phytotoxic to several plant species. *Xanthium strumarium* contains sesquiterpene lactones, which reduced germination of various plants. This review is aimed to summarize the sesquiterpene lactones from Compositae could be useful as a natural herbicide for future weed management programmes.

Keywords: Sesquiterpene lactones (STLs), Compositae/Asteraceae, herbicidal activity

76. SYNTHESIS OF ZINC OXIDE NANOPARTICLES USING AQUEOUS EXTRACTS OF VARIOUS SPECIES OF RED ALGAE

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ABSTRACT

Zinc oxide is a semi conductor material and is widely used in solar cells, gas sensors, ceramics, catalysts, cosmetics and varistors. In zinc oxide studies precipitation method was used followed by controlled and freeze drying process. In the present study, 100mL of distilled water was mixed and heated to 100°C and it was allowed to filter through Whatman 2 filter paper. To 50mL of aqueous extract 2mM of zinc acetate dehydrate($Zn(Ac)_2 \cdot 2H_2O$) was made to react in aqueous water bath for 3-4 hours under continuous stirring at 70°C. A pale white solid product was collected through centrifugation at 4000rpm for 10minutes and allowed to wash carefully with distilled water and then dried at 100°C overnight. The pure zinc oxide nanoparticles were obtained by heating the zinc oxide seaweeds at 450°C for 4hours. The results revealed that extracts when interacted with zinc nitrate solution formed a turbid white solution due to the reduction of zinc ions to zinc oxide nanoparticles followed by precipitate indicated the biotransformation of ionic zinc to reduced zinc and subsequent formation of zinc oxide nanoparticles in an aqueous medium.

Key words : *G. crassa*, *G. verrucosa*, zinc oxide nanoparticles, aqueous

77. Coconut Shell Oil: From an Agro- Industrial Waste to a Sustainable Alternative Source of Energy for Present and Future

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ABSTRACT

Biofuel is the process where energy of organic materials is replaced the function of fossil fuels. Transesterification process converts vegetable oils into usable biofuel forms. This research focuses in production of biofuel from Coconut Shell Oil (CSO) using transesterification method. Experimental data was analysed in the entire processes ethanolic CSO posses significant role for production of biofuel. The most important physicochemical properties of fuel namely kinematic viscosity, flash point, density, gross calorific value and cetane number were experimentally analysed. The obtained biofuel property values are close to commercial petrol, diesel fuel and it may be used as an

alternative to conventional fossil fuels. The biofuel production will enhance the maximum utilization of agricultural wastes. However, it is important that the technology has so far not been sufficiently developed to allow these biofuels to be commercially produced. The obtained biofuel from the Coconut Shell Oil can replace fossil fuels directly for our present and future energy constraints.

Keywords: Coconut Shell oil, Biofuel, Transesterification.

78. The Application of Tannery Effluent on Growth and Biochemical Constituents of Two Halophytic Species *Ipomoea Pes-Caprae* And *Clerodendroninerme*

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ABSTRACT

Heavy metal pollution due to industrial effluents in gaining worldwide attention. Tannery industry is common in many parts of the world and major sources of heavy metals; it polluted groundwater ecosystem and produce major heavy metals and sodium chloride. The present study deals with the effect of tannery effluent in two halophytic species *Ipomoea pes-caprae* and *Clerodendroninerme* grown in pot culture experiments. The aim of this work was to investigate some biochemical system response of these plants to tannery effluent treatment. Analysis was carried out on biochemical constituents, photosynthetic pigments, carotenoid, protein, phenol, amino acids and proline contents of both species. Four months after sowing, plants were subjected to different concentrations of tannery effluent such as 0, 20, 40, 60, 80 and 100% and the samples were analyzed at monthly intervals. The results demonstrated that all the biochemical parameters increased progressively with increasing concentrations of tannery effluent. These results indicate that stress of tannery effluent induced biochemical changes in both halophytes with stimulation of heavy metal concentration. This study suggests that when compared to *Ipomoea pes-caprae* and *Clerodendroninerme* plant can be good source for the phytoremediation of heavy metals polluted tannery effluent contaminated soil.

Keywords: Chlorophyll, Proline, Halophytes, Phenol, Growth.

79. Effect of Different Organic Fertilizers on Phytochemical Characteristics of Chilli

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ABSTRACT

Chilli is the major source of capsaicin, an alkaloid, which is used in medicine as a digestive stimulant. Chilli also contains various phenolics, flavonoids and carotenoids. In the present study to investigate the phytochemical analysis on various treatments revealed that the presence of secondary metabolites like phenol, tannin, alkaloids, flavonoid, quinone, steroid, terpenoid, saponin. The reducing sugar and glycosides were absent in both the ethanol and aqueous extracts. In the chilli plant treated with different organic fertilizers and the result showed that the presence of rich phenol, tannin and quinone are obtained among the various treatments. Groundnut oilcake treated chilli plants contain high percentage of tannin, phenol and quinone, when compared to control untreated chilli plant extracts.

80. *Micrococca mercurialis* Salt Stress Adaptation - An Anatomical and Physiological Analysis

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ABSTRACT

Micrococca mercurialis is a small *Euphorbiaceae* herb grown near seashore /on saline soil and grows under shade, moist damp soil to cut down the transpiration rate and water stress. Morphologically, maximum height and greater population of these plants are observed in saline soil than non-saline. Anatomical characters of this plant show certain adaptive salt tolerance features supporting some physiological activity at cellular level. Initially the presence of non-glandular epidermal trichomes in leaf, the amphistomatic feature of leaves are to get control of salinity stress. The leaf lamina shows accumulation of oxalate as crystals, a characteristic feature of *Claoxylon* is to solve chloride stress from saline soil. In stem there are numerous epidermal hairs and reduced cortex evidences that plant faces salinity stress. The root periderm and fruits turn blue on oxidation due to hermidin, enhances the oxidation and stress resistance. This extra-cellular oxidation can give them a degrading action upon the soil. The thick and wide vascular bundles (genetically controlled feature) in leaf, petiole and stem, assisted with thick fibers and

vessels are also observed which may support to cut down salinity stress. The proteineous phloem is found as dominant tissue, which might help to subdue the saline ions flow. On physiological analysis most of the phytoconstituents are phloem derivatives. In quantitative estimation of phytochemicals, flavonoids (rich in -OH) are more abundant than other compounds, which is produced generally under oxidative stress conditions due to salinity and thus possess good antioxidant property which was proved through DPPH and FRAP method. From GC-MS results, most of the dominant compounds are found to be the derivatives of flavonoids which is synthesized under stress conditions. Further investigation is required in vacuole compartmentalization of salt to prevent salt toxicity, since trinocular microscopic images favors the above assumption, among cortical cells of leaf, stem and petiole. From the above evidences it is clear that *Micrococca mercurialis* possess greater salinity stress resistant adaptations.

81. Heavy Metal content of *Alternanthera philoxeroides* Collected from Polluted and Unpolluted Sites

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ABSTRACT

In recent times, *Alternanthera philoxeroides* is one of the noxious weeds and widely spread in polluted areas of Cooum River of Chennai, Tamil Nadu, India. This study is to analyse the heavy metal content of *Alternanthera philoxeroides* from the polluted area (Cooum River) and unpolluted area (Pechiparai of Kanyakumari District) of Tamil Nadu. In the present study, sample of *Alternanthera philoxeroides* and water was collected from both polluted and unpolluted areas and further study was carried out for heavy metal content of both the samples. The overall heavy metal content was remarkably higher in the polluted site water sample and the polluted site *Alternanthera philoxeroides*. From this study, Pechiparai water sample is safe for drinking purposes from the point of view of levels of pH, EC, TDS, Ca²⁺, Mg²⁺, Na⁺, K⁺, Cl⁻, NO₃⁻ - SO₄²⁻, Fe²⁺, Zn²⁺. Compared to the unpolluted and polluted site, *Alternanthera philoxeroides* has increased amount of heavy metals in polluted site.

Keywords: Heavy Metals, *Alternanthera philoxeroides*, Water Sample from Polluted and Unpolluted Sites.

82. Impact of Cow Urine Extract of Plant Leaves on the Digestive Enzymes of Stored Product Pest, *Tribolium castaneum*

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ABSTRACT

Tribolium castaneum (Herbst) is considered as a pest of stored grains. The red flour beetle, *T. castaneum* is widespread pest, which feeds on a variety of stored dry products. It is estimated that 10- 25% of global production loss occurs from insects other factors annually. The cow urine is a mobile medicinal dispensary and cow urine is a panacea of all diseases. Plant products have been an important alternative option for insect pest management and are being tried to protect nature from pesticidal pollution. Hence the present study was designed to investigate the impact of different formulations of cow urine fermented with plant leaves against the stored product pest, *T. castaneum*

83. Application of Marine Seaweed in Medical and Agriculture Industries.

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There is a long history of coastal people using seaweeds. Seaweed is a wonder plant of the ocean with distinct three varieties includes green, blue and brown and mainly explored for producing rich bioactive substances applicable in the production of industrial based medicinal and agricultural natural ingredients. Thus, it can be utilized as an alternate livelihood option for the coastal poor. As per seaweed cultivation data, Asia is considered as the world leader. Moreover, countries like china, Korea and Japan play a vital role in culturing the seaweeds up to 80%. India has a long coastline along with more than 17, 000 km, and approval of 821 seaweeds species. But, the availability of natural seaweed stocks is not good enough to meet the industrial and national market demands as well. Therefore, the cultivation of seaweeds in large scale is quite important and urgent. The CMFRI and CSMCRI are recognized research institutes and have well developed the seaweed cultivation technique thereby potential collaboration would be between the investor and a research organization supported by a variety of self help groups and fishing communities near by the coastal region of India. Single Rope Floating, Raft Fixed Bottom long line, Integrated Multi tropic Aquaculture are important methods of seaweed farming India. Animal feed, pharmaceuticals, bio-fertilizers has been significant for the growth of the commercial seaweeds market. According to Blue Revolution 2020, our Indian government has recognized the seaweed farming as key area in proceeding the schemes with specific objectives in the integrated development and management of fisheries in India with greater financial assistance to develop the seaweed culture setup.

84. Rapid Germination and Phenotype Variation Of Two Species Of Seeds Exposed To Phyto-Synthesised Cerium Oxide Nanoparticles.

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Abstract

Production and applications of metal oxide nanoparticles are increased in the fast-developing nanotechnology field. Cerium oxide nanoparticles was not essential for plants, it can stimulate the plant growth, which can enter and interact with plant root system without any damage to plant cell. Phyto-synthesised Cerium oxide nanoparticles were characterised using UV-visible spectroscopy, X-ray diffraction, Fourier transform infrared spectroscopy, Field Emission Scanning Electron microscopy with EDAX and HRTEM. To evaluate the effect of Ce on seed germination, initial seedling growth and phenotype variation, two species of seeds (*Raphanus sativus* and *Amaranthus dubius*) were exposed to different concentrations of cerium oxide ($n\text{CeO}_2$), (0 $\mu\text{g/mL}$, 50 $\mu\text{g/mL}$, 100 $\mu\text{g/mL}$, and 300 $\mu\text{g/mL}$). For 3-5 days, germination percentage was recorded. Therapeutic applications like anti-fungal activity of nano Cerium oxide was also studied. Our results indicate that Ce, at the right concentrations, can function as a biostimulant in seed germination and anti-fungal agent.

Keywords: Cerium oxide nanoparticles, Phyto synthesis, *Cassia angustifolia*, seed germination, anti-fungal activity.

85. புறநானூறு உணர்த்தும் சுற்றுப்புறச் சூழலியல்

முனைவர் சு. தமிழ்ச்செல்வி

இணைப் பேராசிரியர்

இராணி மேரி கல்லூரி (த), சென்னை-600 004

தமிழின் செம்மொழிக் கூறுகளுள் 'நிலைபேறு' என்பதும் ஒன்று'. தமிழின் தொன்மை கூறும் நிலைபேற்றுத் தன்மையும் இந்நாள்வரை செழித்தோங்கக் காரணமாய் விளங்குவது தமிழ் மொழியின் இலக்கியங்களும், அதில் அமைந்துள்ள பத்துறை அறிவியற் கருத்துகளுமே ஆகும்.

தாவரவியல் கூறுகளாவன

தாவர உருவவியல் (Plant Morphology), தாவர உடற்கூற்றியல் (Plant Anatomy), தாவர உடலிங்கியல் (Plant Physiology), தாவரச் சூழலியல் (Plant Ecology), தாவரப் பாகுப்பாட்டியல் (Plant Taxonomy), தாவர மரபியல் (Plant Genetic) சுற்றுச்சூழல் அறிவியல் (Environmental Science), மகரந்தவியல் (Palynology) ஆகும். இவற்றுள் சுற்றுச்சூழல் அறிவியல் கருத்தைப் புறநானூறு அன்றே விளக்கியிருப்பதைக் காண்போம்.

நிலம், நீர், காற்று, வானம், நெருப்பு இவை ஐந்தும் மனிதன் உட்பட அனைத்து உயிரினங்களும் வாழ்வதற்குத் தேவையானவை. இதனை மரஞ்சிறுத் முடிநாகராயர் சேரமான் பெருஞ்சோற்று உதியன் சேரலாதனைப் பாடுகின்றபொழுது,

‘மண் திணிந்த நிலனும்
நிலம் ஏந்திய விசும்பும்
விசும்பு தைவரு வளியும்
வளித்தலைஇய தீயும்
தீ முரணிய நீரும், என்றாங்கு
ஐம்பெரும் பூதத்து இயற்கை
போலப்

(புறம். பா. எண்.2)

எனச் சுற்றுப்புறச் சூழலின் தோற்றத்தை மிகத் தெளிவாக விளக்கியுள்ளார். சூழலியலின் மற்றொரு கூறான, இக்காலத்தில் மிகவும் வேண்டப்படுகிற மழைநீர் சேகரிப்பின் அவசியத்தை குடபுலவியனார் எனும் புலவர் பாடியுள்ளார்.

‘மல்லன் மூதூர் வயவேந்தே’ எனும் தொடங்கும் பாடலில்,
‘நீரும் நிலனும் புணரியோர் ஈண்டு
உடம்பும் உயிரும் படைத்திசினோரே’

எனவே

‘நிலனெளி மருங்கில் நீர்நிலை பெருகத்
தட்டோரம்ம இவண் தட்டோரே
தள்ளாதோர் இவண் தள்ளாதேரே’ எனப் பாடியுள்ளார்

இங்குக் குறிக்கப் பெற்றுள்ளவை சங்க இலக்கிய கடலில் எடுத்த சில தாவரவியல் முத்துக்களே. இவை விரிப்பின்

**PAPER PRESENTATION OF PG STUDENTS OF BOTANY
DEPARTMENT, QUEEN MARY'S COLLEGE**

86. The Effect of Pollen Allergens of *Parthenium hysterophorus*

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ABSTRACT

Parthenium disease caused by *Parthenium hysterophorus*. Its belong to Asteraceae family. Native to the American tropics, in India it is commonly known as carrot grass, congress grass or Gajar ghans. The pollen grains of *Parthenium hysterophorus* invades disturbed land, including roadsides. The infests pastures and farmland, causing often disastrous loss of yield, as reflected in common names such as famine weed. The plant produces allelopathic chemicals that suppress crop and pasture plants, and allergens that affect to human health. It also causes pollen allergies. The present study focused on chronic actinic pattern in natural history of parthenium dermatitis.

Keywords: *Parthenium hysterophorus*, Chronic actinic dermatitis and Management.

87. Comparison of WQI South Indian States

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ABSTRACT

The fresh water is of prime important for mankind since it is directly linked to human welfare. Ground water is an important natural source of water supply all over the world where perennial surface water sources are absent or not suitable for usage. Its use in irrigation, industrial and domestic usage continues to increase day by day. The modern civilization, over exploitation, rapid industrialization and increased population has led to fast exploitation of our environment's water source. Water quality index (WQI) provides a single number that expresses quality of water at a certain location and time, based on several physic-chemical parameters of water. The WQI of a certain region from five different South Indian States were compared and observed. The water quality was found to be excellent in Telangana, which is followed by Karnataka and Andhra Pradesh, then Tamil Nadu and was found to be poor in Kerala.

Keywords: WQI, Ground Water, South Indian States

88. Tissue Culture as a Plant Production Technique for Horticulture Crops

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ABSTRACT

Tissue culture technique has played a crucial role in the breeding, production and improvement of crops. The uses of embryo culture in fruit tree breeding and in the 1930s were the first among the application of this technology. The role of tissue culture technique in horticulture can be seen in the production of micropropagation, germplasm storage, pathogen free plant and in plant modification. Several different in vitro approaches are used in this technique. It includes embryo rescue, anther culture, somaclonal variation, transformation and protoplasmic fusion. The utilization of these various techniques with suitable examples from vegetables, fruits and ornamental crops are discussed.

Keywords: Horticulture, Micropropagation, Germplasm storage, Embryo rescue and Anther culture.

89. Medicinal Properties of Tulsi

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ABSTRACT

Plants are important sources of medicine. Today large number of drugs are derived from the Medicinal plants. *Ocimum sanctum* is commonly known as Tulsi. Tulsi is an annual delicate herb found extensively in tropics. It has an important role in Indian mythology. It is recognised as a holy herb. It is recommended for the treatment of respiratory, digestive and skin disease. It is a traditional medicine used as an expectorant, analgesics, anticancerous, anti-helminthic, antiasthmatic, antidiabetic and so on. Its leaves are helpful in sharpening memory and in curing fever and common cold. Other than this there are various medical properties observed in this plant. They are briefly described.

Keywords: *Ocimum sanctum*, Medicinal Use

90. Medicinal Plants and Their Uses

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ABSTRACT

Medicinal plants grow naturally all around the world. Medicinal plants have been playing an essential role in every human's life. They are rich sources of traditional medicines. They have been utilized for a large numbers of years to flavour, to treat wellbeing issue and to avoid illness. The information of their healing properties has been transmitted throughout the world. People have learned how to use plants to fight illness and maintain health. Medicinal plants such as neem, aloe, tulsi cure several common ailments. These are considered as home remedies in many parts of the country. So many consumers are using basil [tulsi] for making medicines, black tea, in pooja and other activities in their day to day life. Many plants produce special substances in their roots, leaves, flowers or seeds that help them to survive. Many of the powerful drugs used in modern medicines originated in plants. Today's plant-based drugs treat a range a diseases, from headaches to cancer.

Keywords: Medicinal Plants, Aloe, Basil, Headaches, Cancer.

91. BIODIVERSITY AND ECOSYSTEM

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ABSTRACT

The ecological consequences of biodiversity loss have aroused considerable interest and controversy during the past decade. Major advances have been made in describing the relationship between species and in identifying functionally important species revealing mechanisms. There is however, uncertainty as to how results obtained in recent experiments scale up to landscape and regional levels and generalized across ecosystem types and process. A major future challenge us to determine how biodiversity dynamics, ecosystem processes and abiotic factors interact.

Keywords: Biodiversity, Ecosystem, Dynamics, Factors, Interaction.

92. Bioremediation of Tannery Effluent using seeds of pongamia pinnata And Terminalia catappa as Natural Goagulant :

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ABSTRACT

Tannery effluent is one of the foremost pollutant of the industrialized world, which poses a serious threat to the environment. The use of natural material of plant origin to clarify turbid surface water is not a new idea. The plant seeds contains large quantity of polysaccharides and proteins with many functional groups such as carboxyl, hydroxyl, sulphate, phosphate, and amino groups, which can bind metal ions. The usage of seeds for the removal of heavy metals from the tannery effluent has shows as promising to removal the heavy metals from aqueous solution.the aim of the present study is to Examine the biosorption efficiency of heavy metals by the seeds of pongamia pinnata and terminalia catappa by treating with tannery effluent and it's analysis the up take of heavy metals by them.

Key words: Tannery effluent, Natural coagulant ,pongamia pinnata, terminalia catappa, Heavy metals.

93. In vitro antioxidant activity and phytochemical screening of *Pseudocalymma alliaceum* Lam.

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ABSTRACT

Pseudocalymma alliaceum (Lam.) is commonly known as garlic vine belongs to the family Bignoniaceae. It is an ornamental evergreen climbing shrub native of Amazonian basin and the leaves and flowers are widely consumed and used in traditional medicine for populations in South America. The plant has multiple uses due to the presence of several chemical constituents with important pharmacological properties. The plant contains sulphur compounds like aliin and allyl sulphides which are responsible for the garlic-like odour and taste. These compounds are known to lower blood-cholesterol levels

and inhibit absorption of cholesterol in the intestines. Plant derivatives are used as antiseptic, diuretic, analgesic and antipyretic. This study is aimed to evaluate the antioxidant activity and phytochemical screening of leaf extracts of *Pseudocalymma alliaceum*. The antioxidant activity is evaluated by determining IC50 value of the leaf extracts using in vitro DPPH free radical scavenging method. The qualitative phytochemical analysis is carried out according to the method described by Ghani (2003). The findings of the study would further establish the development of various formulations for the traditional uses of the plant and pharmacological activities in controlling various diseases.

Key words: *Pseudocalymma alliaceum*, Antioxidant activity, Phytochemicals, Free radical, Pharmacological properties.

94. Review on the medicinal properties of *Eryngium foetidum*

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ABSTRACT

Herbs play a vital role in human health and are also used in the treatment of human diseases. The present study was aimed to discuss the uses of *Eryngium foetidum* (saw tooth coriander) which belongs to the family Apiaceae. It is a herb extensively used as a medicinal and aromatic plant in most of the tropical region. They are native to Mexico, Tropical Africa, Caribbean, South Asia, Central, warmer southern parts of South America, Europe and Pacific Island and it is cultivated world wide. The leaf of this plant is used as febrifuge and laxative. It is also used to treat chills, grippe, fevers, head colds and as purgatives in children, children's leprosy, convulsion. *Eryngium foetidum* is also used to cure abortifacient, stomachic, sudorific, snakebite, stomachaches, Hydropsy, malaria, pneumonia, flu, asthma, constipation, hypertension, worms, infertility, seizure, dysentery, gastrointestinal disorder, wound healing, epilepsy, paralysis, liver, hepatic problems, arthritis, scorpion stings, herbal bath for chicken pox and measles. Plants contain alkaloids, anthraquinones, coumarins, flavonoids, phylobatannins, saponins, tanins, terpenoids. This plant also contains antimicrobial, anti-inflammatory, antioxidant, anticlastogenic, antidiabetic, anticarcinogenic properties. In conclusion this plant helps in the treatment of various ailments.

95. A STUDY ON CHEMICAL AND MEDICINAL PROPERTIES OF *Dahlia spp.*

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ABSTRACT

Medicinal plants have been discovered and used in traditional medicine practices since prehistoric times. Plants synthesis hundreds of chemical compound for many functions. Medicinal plants are widely used in non industrialized societies, mainly because they are readily available and cheaper than modern medicines. The present study is aimed to discuss the chemical properties and biological activities of *Dahlia spp.* belongs to the family Asteraceae. It is found predominantly in Mexico. The plant contains Alkaloids, Phenols, Terpenoids, flavonoids, Tannins, Glycosides and steroids. The plant possess antimicrobial, anti-inflammatory, antioxidant and neurotoxic, phototoxic properties. Every part of the plant is useful for human needs.

Keywords: *Dahlia spp.*, chemical properties, antioxidant, anti-inflammatory, antimicrobial.

96 . Plant Breeding Innovation: CRISPR-Cas9

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ABSTRACT

CRISPR-Cas9 system is an innovation in plant breeding that uses site targeted nucleases to modify DNA with high accuracy. Clustered Regularly Interspaced Short Palindromic Repeats is an integral part of a bacterial defense system. This immune system protects the bacteria from repeated viral infections by adaptation-insertion of viral DNA as spacers, CRISPR RNA production including the viral DNA and Cas genes and targetting and destroying the viral material. Now this system is being used by scientists to develop improved crop varieties. Instead of the viral DNA material scientists design their own sequences as the gene of interest. These developed sequences like the spacer, guide the Cas9 protein to a matching sequence. CRISPR-Cas9 allows scientists to silence genes, insert genes, conduct DNA free editing and transient gene silencing. It is used to generate targeted DNA breaks in living cells. The changes in the DNA is made during the cellular DNA repair process. This gene editing is focused on agricultural crops to improve trait, yield, plant architecture, plant aesthetics, and disease tolerance. CRISPR has been successfully used to edit genome of rice, bringing about resistance to *Xanthomonas citri* in citrus fruits and to manipulate photo response in tomato. This system is also being used in gene editing in animals.

97. AGRONOMIC ADAPTATION OF FIELD CROPS

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This study is focused on the various agronomic traits to adaptations of cultivated field crops. Adaptations are special features that allow the living creatures to live in a particular place. Life has existed for more than 2500 million years on earth and the birth of agriculture some 10000 years ago which has revolutionized human culture and society. The term adaptation refers to the ability of different species with different genetic make-ups to cope with a specific range of circumstances such as climate, food supply, habitat, defence and movement. Since certain plants cannot grow away from their habitat place, crops must be placed in an environment that meets their requirements. Adaptations can be structural, behavioural and physiological environmental factors, such as photosynthetic activities, biodiversity and soil conditions play a main role in the adaptations of cultivated field crops. Inspired of all these global warming is most important factor in relation to field crops. Specific plant adaptation requirements and peculiarities are to be known to protect the field crops from harmful effects which are produced by certain environmental factors. The future of agricultural production and sustainability depends on the ability of crops plants to grow and be productive in response to changing environment.

Keywords: - Agronomic adaptation, field crops, plants.

98. SECONDARY GROWTH IN *BOERHAVIA*, *BOUGAINVILLEA* AND *NYCTANTHES* STEM

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ABSTRACT

Many dicots are found to show anomalous secondary growth. In this study the hand sections of *Boerhavia*, *Bougainvillea* and *Nyctanthes* stem was studied. The stem revealed anomalous secondary growth characterised by the development of successive rings of xylem and phloem. *Boerhavia* is a genus of over 100 species. In habit they are herbaceous. *Bougainvillea* is a genus of thorny ornamental vines, bushes or trees. The genus *Bougainvillea* is a very widespread group throughout the world. Both *Boerhavia* and *Bougainvillea* belongs to the family Nyctaginaceae. *Nyctanthes* is a genus of flowering plants in the family Oleaceae, native to southeastern Asia.

Keywords: - Anomalous secondary growth, *Boerhavia*, *Nyctanthes* and *Bougainvillea*.

99. A REVIEW ON VITEX NEGUNDO L. A MEDICINALLY IMPORTANT PLANT

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ABSTRACT

Natural products are rich in several potent bioactive compounds, targeting complex network of proteins involved in various disease. So, in recent times focus on plant research has increased all over the world and large body of evidence showed the immense potential of medicinal plants used in various traditional systems. *Vitex Negundo* L. (Verbenaceae) commonly known as Chaste tree is an ethnobotanically important plant with enormous medicinal properties. All parts of the plant from root to fruit possess a multitude of phytochemical secondary metabolites which impart variety of medicinal uses of the plant. The plant is a component of a number of commercially available herbal formulations and has also shown potential as an effective bio-control agent. Employment of techniques such as cell and tissue culture would provide means of rapid propagation and conservation of the plant species. Different species of *Vitex Negundo* in chemical composition thus producing different phytochemicals. Its bio-active compounds exhibit anti-inflammatory, antioxidant, antidiabetic, anticancer, antimicrobial activity. *Vitex Negundo* is typically known for its role in the modulation of cellular events like apoptosis, cell cycle motility of sperms, polycystic ovary disease.

Keywords: - Vitex Negundo, Medicinal Uses, Phytochemicals.

100. Potential of sodium alginate in immobilization of micro algae.

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ABSTRACT

The present study is to demonstrate the potential use of alginate immobilization technique in microalgae culture. Sodium alginate is the most commonly used polymer matrix in microalgae immobilization. However, the susceptibility of alginate matrixes to cation chelating agent and antogelling cation limits the use of alginates in estuarine and marine system. Hence, the present study aims to investigate the stability of sodium alginate in marine water and the feasibility of microalgae to grow when immobilization in Sodium alginate for marine water treatment. Details of the use of immobilized algae, the techniques of immobilization and the effects of immobilization on cell function are included. The immobilized microalgae in these process is very adequate and offers

significant advantages in bioreactors. Large quantity of oxygen evolves as a by product of photosynthesis in microalgae cultivation.

Keywords: Microalgae, immobilization ,sodium Alginate, marine water.

101. A STUDY ON MEDICINAL PROPERTIES OF *TAMARINDUS INDICA*

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ABSTRACT

The plant kingdom is a treasure house of potential drug and in recent years there has been an increasing awareness about the importance of medicinal plant . Drug from this plant are easily available and less expensive safe and efficient and rarely have side effects . *Tamarindus indica* the tree is mostly found in the Asian countries like India , Thailand , Bangladesh , Sri Lanka , and Indonesia . In America , Mexico and Costa Rica are biggest producers . *Tamarindus indica* belongs to the family Leguminosae commonly known as Tamarind , is one such medicinal plant which is being used traditionally in abdominal pain ,diarrhea , and dysentery helminthes infections , wound healing , malaria and fever , constipation inflammation , cell cytotoxicity, gonorrhoea , and eye diseases . plant contains Alkaloids, Terpenoids, Saponins, Tannins , Glycosids , Steroids. The plant is possess antidiabetic activity , antimicrobial activity , antivenomic activity, antioxidant activity antimalarial activity , antiasthmatic activity . Every part of the plant from root to leaf tips is useful for human needs .

Key words – *Tamarindus indica* , antimicrobial activity , antioxidant activity ,Tamarind .

102. Mimicry Between Plants and Animals – An Upcoming Approach To Use Decellularised Plant Scaffolds As A Sustainable Tool For Regenerative Medicine.

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ABSTRACT

Mimicry is the ability of an organism to resemble another organism physically or chemically. Structural mimicry are seen in specific animals and plants, such as the vasculature in *spinacia oleraceae* and the branching pattern in human heart. This can be used to obtain decellularised spinach leaf scaffolds having the innate microvasculature that supports the flow of RBCs . It is then endothelialized using HUVECs and seeded with

hMSCs to overcome autofluorescence generated within the plant tissue and the hPS-CMs were seeded on its surface which demonstrated contractile function and calcium handling capabilities over the course of 21 days. This paves the way for an ecofriendly approach towards regenerative medicine. Further, it leads to the production of cost efficient human organs from plants.

Key words: Mimicry , *spinacia oleraceae* , decellularization , scaffolds , microvasculature ,RBC , HUVEC , hMSC ,autofluorescence , hPS-CM , regenerative.

103. FOOD MICROBIOLOGY

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ABSTRACT

It is the study of microorganisms that inhibit, create, or contaminate food. This also includes the study of microorganisms causing food spoilage, as well as, pathogens that may cause disease especially if food is improperly cooked or stored. The microbes are used to produce fermented foods such as cheese, yoghurt, bread, beer and wine. The other useful roles such as producing probiotics. In this presentation, the role of microorganisms in preparation of certain foods, in spoilage of food, food born intoxications and infections, and method of preservation are discussed.

Keywords: - Microorganisms, Pathogens, Probiotics, Intoxications, Preservation.

104. A REVIEW ON BONSAI CULTIVATION AND ITS TYPES

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In this modern era there are many ways for the cultivation of the plants and trees. The bonsai are grown mainly for decorating house in aesthetic sense. At the same time provides fresh oxygen to us. In this presentation the history of bonsai cultivation and its types has been discussed. The main objective of the review is to introduce the aesthetic beauty of bonsai to the student community. Bonsai is a Japanese art form using cultivation techniques in containers, small tree that mimic the shape and scale of tall size trees. This art came into the emergence from the 6th century onwards. Now various types and forms of bonsai have come into existence.

Keywords: - Bonsai, History, Trees, Types.

105. Application on Seaweed Extracts As Bio- Fertilizers

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Abstract

Seaweeds are marine macro algae which form an important component of the marine living resources of the world. The plant growth hormone's effect of seaweed is advantageously made use to stimulate germination and growth thereby increasing the yield and resistance. Seaweed liquid fertilizer is a bio-organic mixture that contains many growth promoting substances like auxins, gibberellins, trace elements, vitamins and amino acids. They are commercially economic important, renewable marine resource. Variability in chemical constituents and growth of algae may be interspecific, intra-annual or inter-annual. The liquid seaweed extracts from seaweeds are usually prepared by hydrolyzing the material under pressure. However, the preparation may vary from species to species depending upon the amount of dried material available. Its method of extraction significantly differs from person to person and also the mode of application to crops.

Keywords: Seaweeds, auxin, gibberelin

106. Biodegradation of Microplastics In The Marine Environment Using Marine Fungi

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Abstract:

The microplastics present in the marine environment is going to cause a substantial problem in the marine ecosystem. These microplastics can be biodegraded by the marine fungi. The degradation of microplastics can also be done using physical and chemical methods. However, it will release toxic chemicals in the marine environment and hence that can cause damage to marine organisms. Biodegradation method is the most viable method for the degradation of microplastics. Our main aim is to degrade the toxic microplastics from the marine environment and we first focus on the adverse effects caused by micro plastics in the marine environment and then we are focusing on the degradation of microplastics in the marine environment. The marine organisms now lives in the "PLASTISPHERE" which is nothing but the microplastics which forms the biofilm in the ocean. Thus, using fungi such as *Zalerion maritimum* for the biodegradation of microplastics is the best remedy.

Keywords:

Zalerion maritimum, biodegradation, microplastics, marine pollution.

107. Marine Algae: Therapeutic Potential for Osteoblast Differentiation

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Abstract:

Marine algae represent a highly diverse reserve of bioactives which could aid in the treatment of a wide range of diseases, including various musculoskeletal conditions. Osteoporosis is one of the bone diseases caused by an imbalance between bone formation (osteoblast) and resorption (osteoclast). Osteoporosis in particular would benefit from a novel and effective marine-based treatment, due to its large disease burden and the inefficiencies of current treatment options. In recent years, marine algae have been in the center of interest as a sustainable, rich source of bioactive compounds with different biological actions. One of the important natural product investigations from marine algae is to focus on the pharmaceutically important compounds that can be applied in bone health. Promotion of osteoblast differentiation is one of the best therapeutic ways to combat osteoporosis. Health problems related to the lack of bone formation are a major problem for ageing populations in the modern world. There have been reports that extracts or purified compounds from marine micro- and macroalgae can suppress osteoclast differentiation and induce osteoblast differentiation. Therefore, substances that can induce osteoblast formation are potential candidate materials for drug development or functional foods.

Keywords: Marine natural products, osteoblast differentiation.

108. Phosphate Solubilization Potential of Rice Rhizobacteria

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Abstract:

Phosphorous is a macronutrient in soil which is necessary for plant growth and its deficiency restricts crop yield. Plant growth-promoting rhizobacteria (PGPR) are soil and rhizosphere bacteria that benefit plant growth by different mechanisms. The rice rhizosphere soil are known to contain a high diversity of PGPR which enhances the growth of the plant. In the present study, 4 different rice rhizosphere soil samples were collected from the different localities of Thiruvallur district to isolate promising phosphate solubilizing rhizobacteria (PSRB). The isolations were done on nutrient agar medium followed by serial dilutions and colonies with different morphological variations were

isolated, characterised and screened for phosphate solubilization. A total of 73 isolates were differentiated and maintained as pure cultures on nutrient agar medium. Out of the 73 isolates obtained from rice rhizosphere samples, 5 best phosphate solubilizing rhizobacteria were selected based on their high phosphate solubilisation.

Keywords: *Rhizobacteria, phosphate solubilisation, biofertilizer.*

109. Phosphate Solubilizing Fungi from Rhizosphere Soil

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ABSTRACT

Phosphorus (P) is one of the major bio elements limiting agricultural production. About 95 to 99% P is in unavailable form for plant growth. Phosphate solubilizing fungi (PSF) generally enhance available phosphorus released from soil, which contribute to plants P requirement especially in P-limiting regions. The present study was aimed at isolating and evaluating phosphate solubilizing fungi from rhizosphere soil samples of different crops like rice, tomato, banana, and brinjal from Thiruvallur district. The isolations were done on potato dextrose agar medium and fungal isolates were screened for phosphate solubilisation on Pikovskaya (PVK) medium. A total number of 30 isolates were obtained from the rhizosphere samples. Among the total isolates, 16 isolates were solubilizing phosphate. Most of the phosphate solubilizing fungi belonged to genera of *Aspergillus*, *Penicillium*, *Sclerotium*, *Fusarium*, etc. The present study indicated the presence of diverse plant associated P-solubilizing potential fungal candidates that may serve as potential biofertilizers.

Keywords: *Phosphate solubilizing fungi; industrial application.*

110. Anticancer Activity of Phycocyanin From Cyanobacteria

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Abstract:

Natural products have become increasingly important for the application of chemical prevention and treatment for diseases. Marine natural products with pharmacological

activity have been shown to have potent anti-cancer activity, and have less or no toxic side effects. Thus, marine natural products have an important development and utilization in recent years. In addition, marine natural products have become one of the most important resources of novel lead compounds for critical diseases. Cyanobacteria are aquatic, photosynthetic, quite small and usually unicellular though they often grow in colonies large enough to see. They are also called blue green algae as they possess a bluish green pigment known as phycocyanin. Phycocyanin (PC), a natural extract, has been studied for its anti-cancer effect on malignant solid tumors. In addition, phycocyanin is a toxin on cancer cells while it is non-toxic to normal cells. There are many reports showing anticancer activity of Phycocyanin obtained from different species such as *Aphanizomenon* sp., *Spirulina* sp., *Phormidium* sp., *Symploca* sp., *Lyngbya* sp., *Porphyridium* sp. Thus phycocyanin, a potential drug for cancer treatment.

Keywords: *Cyanobacteria, phycocyanin pigments, anticancer activity.*

111. Anticancer Activity Of Fungal Metabolites

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Abstract:

Natural products and their derivatives have traditionally been a major source of new anticancer agents. To date, predominantly metabolites from plants and bacteria served as lead structures for anticancer agents. Recently, there are emerging efforts in finding potential fungal candidates with anticancer activity. There are many significant research efforts revealing large number of fungi-derived natural products with promising anticancer activity. Many of these natural products have displayed notable in vitro growth-inhibitory properties in human cancer cell lines and select compounds have been demonstrated to provide therapeutic benefits in mouse models of human cancer. The anticancer metabolites are grouped into three categories based on the fungal source from which are isolated. These include metabolites produced by (i) phytopathogenic (ii) toxigenic and (iii) non-toxigenic fungi.

Keywords: *Fungal metabolites, anticancer activity.*

112. TRANSGENIC PLANT DEVELOPMENT AND CONCERNS

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Genetically modified plants protect animals, plants and human health from an increasing number of global disease threats. So, there is a need to use genetic techniques to improve crops over the recent decades. Through the use of transgenics one can produce plants with desirable traits and even increased yield that lasts longer and withstand pests and diseases. Transgenic plant production will allow us to feed the growing population and to produce more desirable products. Many IBCs (International Biosafety committees) function as both the facilitators of basic science research and important crop innovation that serve the public trust. This chapter presents a perspective on how IBCs function to support responsible research and, ensure of the US food supply and export commodities and explore the specific challenges and opportunities and research involving genetically modified plants. The future of GM crops remains a vital debate, as its application has several advantages and disadvantages.

Keywords: GM crops, Resistant varieties, Transgenics, IBCs, Management regulator and Publicly funded

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தமிழ்த்துறை,

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இணைப்பேராசிரியர்,
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தமிழ்த்துறை,

இராணிமேரிகல்லூரி,

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RESEARCH

30.07.2016

Research is a non-scientific word pronounced by the researchers all around the scientific world.
This poem is weaved with special reference to Plant science.

Research is basically a search made by different fellows all over the world, mainly the....
Junior Research Fellows (JRFs), Senior Research Fellows (SRFs),
Post-Doctoral Fellows (PDFs) and the designated Research Fellows (Scientists).

One's heart must be filled with passion to search and re-search in the field of Botany.

Searching for Literature is perhaps the first step, keep in touch with Library.
Searching for Plants is of course the second step, start exploring the Forests.

Characterization of Plants may be the third step, start working in the Laboratory.
Publicising the research findings is the fourth step, opt for the suitable Journals.

Attending the conferences is the semi-final step, get prepared for that.
Patenting the novel research findings is the final step, forget not to file it.

Sincere research fellows would bring out a series of genius publications.
Insincere research fellows would bring out a series of bogus publications.

In fact, Research is a continuous search, made by dedicated researchers, across the globe,
Who give their Heart, mind and Soul till their last breath, for the sake of Science & the Society.
As the Mountains are covered by meadows, here and there;
As the meadows are grazed by wild animals, here and there;
So as the new plant species are discovered by Taxonomists, here and there.

For the kind attention of the Learners!
Learn to get expertise in describing Morphological and Anatomical characters,
that is one of the prime duties of the Botanists.
Options are unlimited in various branches of Botany.
Research is not at all a virgin field, but... let the chosen research discipline be preferably virgin!

”வெள்ளத் தனைய மலர்நீட்டம் மாந்தர்தம் உள்ளத் தனைய சூயர்வு” , says Saint Thiruvalluvar.

“As the stem of the Lotus progresses proportionate to the flooding water.
So a man's progress is always proportionate to his positive thoughts and mindsets”.

If you would aim to become a Fellow of the Royal Society, London.
At the least, you could become a Fellow of Indian Botanical Society.
Positive thoughts coupled with Sincerity & Hard work would surely bring success!
Search and Re-search, you would surely find what you are searching for!

- ABD SELVAM (Late), Scientist – D, Pharmacognosy Section, BSI, Kolkata.